SOUTHERN

Flight

Including MODERN AIRPORTS

October, 1945 · 25 cents

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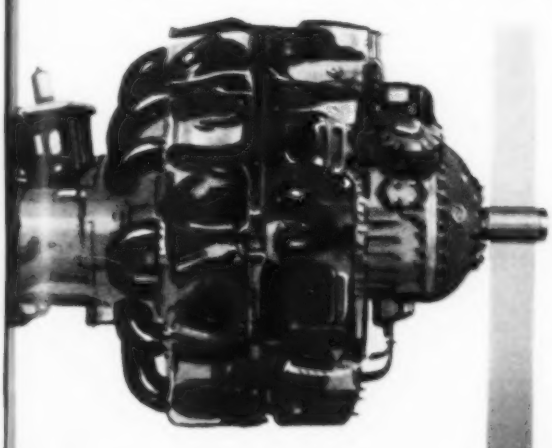


From advanced trainers to transports and heavy bombers more than half of all U. S. warplanes in the fight were powered with dependable Pratt & Whitney engines.

PRATT & WHITNEY AIRCRAFT

EAST HARTFORD, CONNECTICUT

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

OCT 23 1945

of course we'll

"KEEP 'EM FLYING"

Air Power has clearly demonstrated its vital role in helping to terminate the greatest struggle that man has waged against man. » »

So, too, Air Power is Peace Power, for by the lessons learned through war's testing needs, there have accrued such accelerated developments of safety, comfort, and efficiency, that this mighty power is further strengthened to guard the rights of all. » »

Years of experience in creating the famous P-47 Thunderbolt to exacting specifications of the Army Air Forces, and engineering and development work in the constantly broadening channels of aircraft construction, have developed a highly skilled group of scientifically trained workers here at Republic. We will continue to build planes needed to police and maintain world peace, and in addition, shall apply the energies of our seasoned personnel to the building of a line of aircraft for the peace time markets. Republic Aviation Corporation, Farmingdale, L. I.

REPUBLIC AVIATION

CORPORATION

Makers of the Mighty Thunderbolt

The Grumman Widgeon now brings remote points within easy flight

Grumman

AIRCRAFT ENGINEERING CORPORATION, Bethpage, L. I., N. Y.

CURTISS SEAHAWK

HERE'S the fastest traveling, highest climbing, heaviest armed, most maneuverable "eye" the Navy has ever had! It's the Curtiss *Seahawk*, versatile one-place scout whose specialty is pinpointing enemy ships and shore installations for naval attack.

The Seahawk can even sock them itself for it carries both depth charges and bombs.

Paradoxically, this swift bird of prey is all set for missions of mercy, too. Rescue work is facilitated by bunk space in the fuselage.

With twice the speed, nearly three times the horsepower and many times the firepower of any airplane in its class, the *Seahawk* is another Curtiss-Wright contribution to a vastly superior Naval air arm.

From now on, the Navy's way of saying "I'll be seeing you" will be to catapult a Curtiss Seahawk into the skies.

CURTISS
AIRPLANES
DIVISION OF
CURTISS WRIGHT
FIRST IN FLIGHT

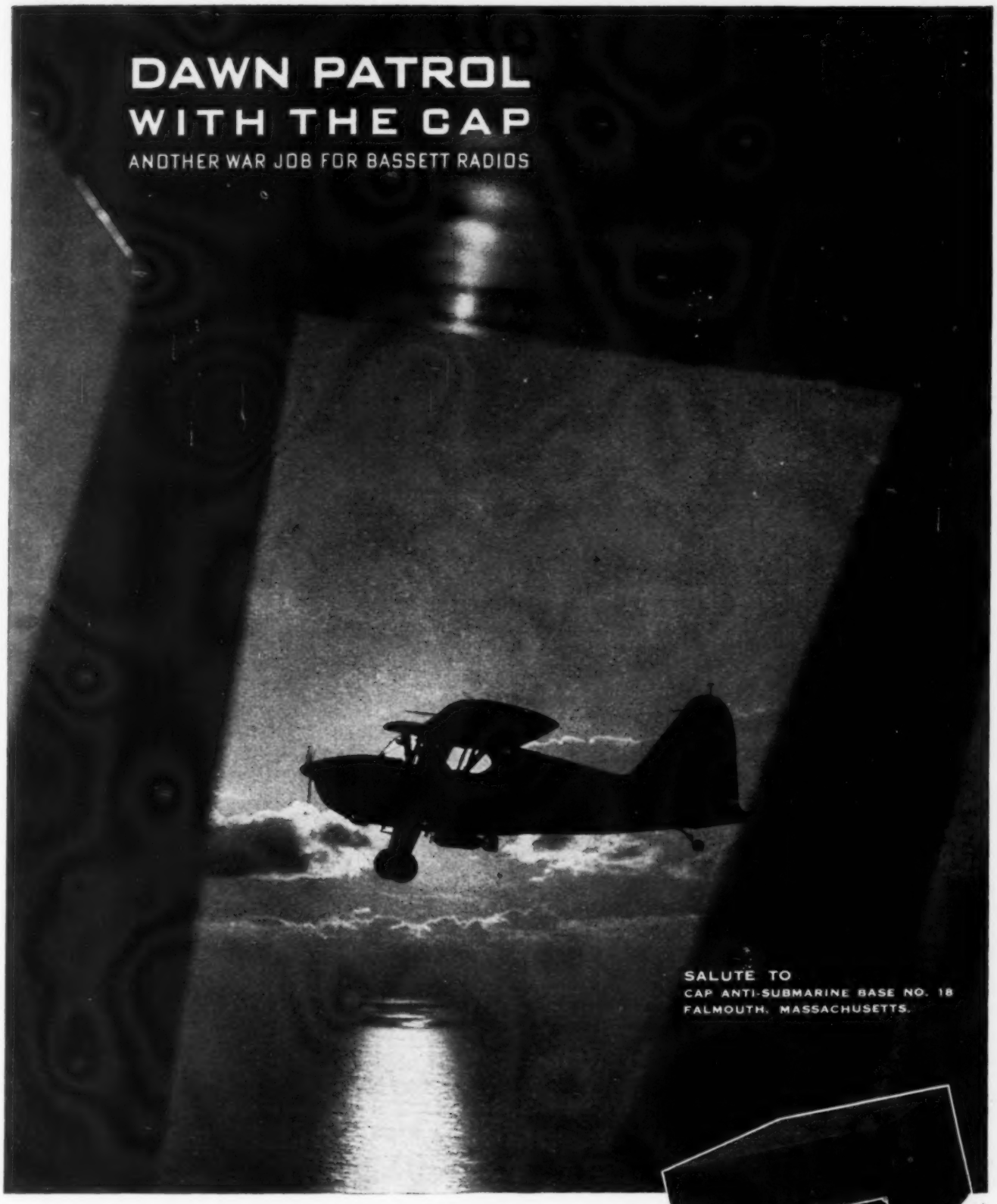
Printed in U.S.A.

MISSION OF MERCY: With its extra horsepower and fuselage bunk space, the SEAHAWK facilitates rescue of men forced down at sea.

MISSION OF DESTRUCTION: The SEAHAWK can deal out punishment. This new plane carries depth charges. Under each wing is a bomb rack.

DAWN PATROL WITH THE CAP

ANOTHER WAR JOB FOR BASSETT RADIOS



SALUTE TO
CAP ANTI-SUBMARINE BASE NO. 18
FALMOUTH, MASSACHUSETTS.

Submarine Hunting, dawn to dusk, with the Civil Air Patrol, called for hours of uninterrupted Radio Communications—Success of the Mission, Lives of the CAP Volunteers, depended upon Radios and their Day after Day Dependability. Standard Production Civilian Aircraft Radios, Built by Bassett, Performed Under these tough War-Job conditions. Choose your Peace-Time Aircraft Radio from this famous line—They're Engineered for the Job!

MODEL CR 12 COMBINATION
AIRCRAFT TRANSMITTER-RECEIVER

REX BASSETT, INC. FORT LAUDERDALE, FLA.

DESIGN FOR PROGRESS: The airlines are planning radical new improvements, some of which, including the newest transport designs, are discussed on page 42 of this issue. Still in the future is the newest proposed design, Republic's forty-passenger Rainbow (above), claimed to be the fastest luxury airliner on the boards. Details of the Rainbow have not been revealed.

Revving Up

Fertilization of rice and oat crops in Arkansas by airplane has been conducted with impressive results. L. C. Kapp, associate professor of agronomy at the University of Arkansas, reports twenty-seven acres of growing rice were fertilized with 4,200 pounds of cyanamid at a cost of $1.55 per acre for the application, or about one cent per pound. Application by airplane eliminated labor on levee work required by surface application. This fall an airplane will be used to apply 15,000 pounds of phosphate to 100 acres preparatory to sowing the tract with winter oats by airplane. Professor Kapp is studying the possibilities of a granular form of fertilizer applied by airplane to rice at a time when the growing plants need it most for increased yield. Distribution is controlled quite accurately by the speed of the low-flying planes.

A refresher training program has been developed by the CAA and Army Air Forces to enable skilled AAF airplane and engine mechanics to obtain CAA certificates before discharge. A sample examination of 120 AAF mechanics revealed those with a year of experience and a "skilled" Army rating are weak in Civil Air Regulations and propellers, many having had no experience at all with wooden propellers. The special refresher course, lasting sixty to ninety days, was designed so that AAF mechanics will be easily able to pass the CAA examination and return to civilian life fully qualified as aircraft or engine mechanics.

For new aeronautical record attempts and increased activity in air racing, the National Aeronautic Association contest board, which is the U. S. representative of the Federation Aeronautique Internationale and supervises all American trials for official national and international records and sanctioned air races, is recruiting new timers and officials and revamping timing and measuring instruments. One-third of the prewar staff of timers and officials have been lost since Pearl Harbor.

Special glass projection screens for radar

(Continued on page 22)

SOUTHERN
Flight
Including MODERN AIRPORTS

Twelfth Year of Progress With Aviation

OCTOBER, 1945 VOL. XXIV, NO. 4

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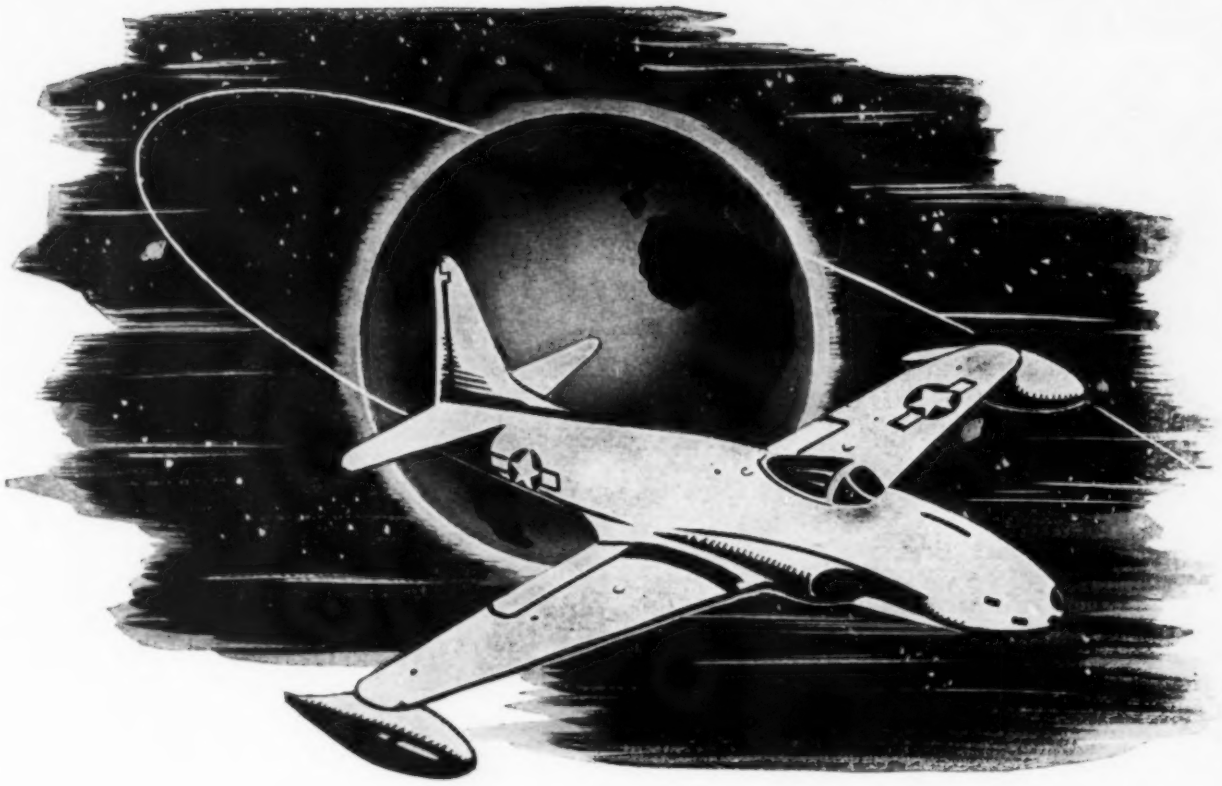

Around the World in 45 Hours

The dramatic advent of the P-80 Shooting Star captured the world's imagination because it travels higher and faster than man has ever ventured before. In it, circumnavigating the globe will become a matter of hours instead of days.

The Shooting Star is propelled at its incredible speed by the world's most powerful aircraft engine whose single moving part makes 10,000 revolutions per minute.

Working side by side with the designers of jet propulsion have been the developers of Humble-Esso Aviation products. By thinking and planning ahead, these laboratories have laid the foundation for many important advancements in aeronautical design. Humble-Esso's continuing research promises you finer fuels and lubricants for your post-war plane, fuels and lubricants that are not only abreast but ahead of aviation development.

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Yesterday Humble-Esso Aviation Products served the vital demands of war; today they serve equally well the needs of peace.

JUST AMONG OURSELVES

Editorials and Comment

EXPERIMENTS DON'T WIN WARS

TEN years ago this month SOUTHERN FLIGHT published an article by the commanding general of the GHQ Air Force, Brigadier General Frank Maxwell Andrews, whose opening paragraphs follow:

"Air Power today is an important factor in the relationship between nations. The various countries with their different racial psychologies and geographical situations have organized their air forces to exert Air Power each according to its own conception and need.

"The present great range of our bombardment aviation (the B-17 was well under development at the time), the backbone of our basic element of the Air Force, makes it a very potent factor in the defense of our country against foreign aggression at distances far beyond the sphere of influence of the ground forces. A strong GHQ Air Force, properly equipped, manned and trained, will serve as a powerful deterrent to any potential enemy contemplating an attack upon our shores. Should an attack nevertheless be undertaken, the Air Force will be informed through various agencies and means, of location, composition, direction of movements, and probable intentions of the enemy, and will strike him at the proper place and time. In some cases this will be far at sea, and in others it will be close to shore or on shore."

Reporting on the condition of our Air Force in 1935, Andrews made this observation: "We are definitely limited and handicapped by three major items —equipment, personnel and bases. For those things we are dependent on Congressional action. The War Department has set as a goal, 2,320 airplanes for the entire Air Corps at home and overseas. (This figure included trainers.) Of this number 980 have been allocated to the GHQ Air Force. Actually we have only about one-third the allotted 980."

General Andrews closed his article with this prophetic statement: "It is inconceivable that any enemy, no matter how powerful, would dare attack us unless he estimated he could gain supremacy in the air. A strong and well prepared Army Air Force, ready at all times for action, is a vital element in our National Defense."

One of the many personal tragedies of this war may be found in Frank Andrews' untimely death, which cheated him out of the fruits of victory. Like Billy Mitchell, he didn't live to see his theories vindicated, his warnings justified. He died in an airplane crash in Iceland about the time the big but belated Allied air push got under way. A large measure of the credit for Allied success in wresting control of the air from the Luftwaffe may be given to this great exponent of American Air Power and of counter-air force strategy that beat Germany, and later Japan, to pulp.

We need men like Frank Andrews now—intelligent spokesmen for the maintenance of strong U. S. air power —in greater numbers than ever before, because this nation already is starting down the same tragic road we traveled after the last world war. In the short span of a few weeks, since Japan's collapse, we have begun to dissipate many of the elements of air power created in World War II at such a terrific cost in spite of the "different racial psychologies and geographical situations" which Frank Andrews spoke of in 1935 and which still exist throughout the world.

Not long ago, during a discussion of the predicament U. S. air power now finds itself in, someone asked if Russia was cutting back her air forces and aviation industry. Just what is the nature of the cutbacks in Russia, if any? We would like to know the answer to that one. Congress should know. Will the Russians and the British, as well as all the other nations, cut back research, cut off training, wipe out their tools, equipment, engineers and factories, liquidate their bases, stop production and place their national security into total dependence upon a few experimental models?

In World War I the United States built some 13,000 military airplanes. None of them saw combat. In World War II, a couple of years were required to get going—two years in which our Allies held a protective umbrella over our heads. There won't be any umbrella next time, no days of grace.

When we wrested control of the air from Germany, the jig was up for the Nazis. When Japan lost the initiative in the air, her fate was likewise decided. Yet there are millions of people in this nation today who tell you the atomic bomb won the war!

It will be sheer folly and in all probability complete national suicide to continue any farther down the road we're now traveling. We must accelerate research, not reduce it. We must preserve our strategic air bases throughout the world, not give them away. We must continue to train men and guarantee the flow of new blood and new ideas into our air arm. We must, above all, put the best of our experimental models into sufficient production and into simulated combat conditions so that production can be expanded immediately on *tested*, first-line fighting aircraft. Experimental airplanes won't win the next one for us. The best proof of this may be found in the information now pouring out of Germany, where many excellent experimental models have been discovered —most of which are superior to many of our developments. But the excellent German experiments came too late. We beat them by a couple of months—by the skin of our teeth.

General Andrews is dead. But his words live on. *"It is inconceivable that any enemy, no matter how powerful, would dare attack us unless he estimated he could gain supremacy in the air."*

☆ ☆ ☆

COMPETITION

THE other day we heard an important aircraft manufacturing executive rake the airlines over the coals with considerable ridicule and invective. At first we thought he was kidding but as the conversation developed we were amazed to find he was in dead earnest. "Take Chicago to New Orleans for example," said the critic. "You can board a comfortable train in the late afternoon at Chicago, have some refreshments, eat dinner, retire in a comfortable bed and at eight o'clock the next morning be reasonably sure you are somewhere near New Orleans, and by nine o'clock you're on the job. But the airline—now there's some-

worth waiting for NEWS

No. 10

THE TENTH OF A SERIES OF INFORMATIVE ADVERTISEMENTS ABOUT THE NEW CULVER.
PUBLISHED BY THE CULVER AIRCRAFT CORPORATION, WICHITA 1, KANSAS

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ORGANIZED CONFUSION

IN the past few months, we, at Culver, have read many advertisements, brochures, and sales pro-

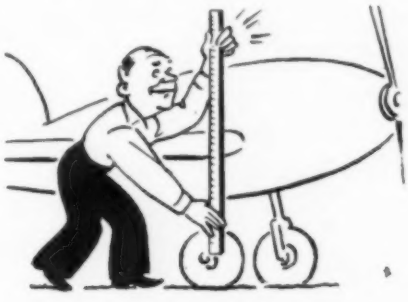
motion pieces from a number of recognized aircraft manufacturers, as well as from new companies who intend to enter the aircraft field of manufacturing.

We have studied the claims, the copywriters' high-sounding phrases, the *proposed* performance figures and *proposed* specifications of the "airplanes of the future," and, frankly, we are confused. Undoubtedly, some who buy airplanes on the basis of *proposed* specifications will be well satisfied. But, unfortunately for the industry and for the man who is willing to put up his money on the basis of promises and representations, there will be many disappointments.

For this reason, we, at Culver, have taken no deposits nor made any dealer or distributor commitments, for we believe there is only one way to sell; and that is on the basis of fact rather than expectations. In other words, until our New Culver has proved itself, its performance, stability, and other specification data has actually been checked, re-checked, and proved, we feel no concrete transactions should be made. Sure, we may miss some sales, we may miss some deposits; but this much is certain, a purchaser will get a product that will meet its honest guarantees, and the Culver of the future will be on a sound foundation.

One of the fine things about aircraft is that it is not measured by appearance or gingerbread, comfort or representations of superior product because it is built from a certain material. But the time-old formula of how much payload can be carried safely, at what speed for a given horsepower, becomes the equation of evaluation of aircraft. This formula, plus sound construction, cruising range, landing speed, take-off run, rate of climb, service ceiling, stability, simplicity of operation, safety features, and price combine to give a prospective buyer a yardstick to actually figure, by facts and performance, the relative merit of an aircraft.

We have made certain revolutionary statements of what we are trying to do at Culver. We have told of the New Culver with simplified controls, electrically-retracted tricycle gear, vastly increased cruising



range, ample baggage room and payload, comfort in the individually adjusted seats, soundly engineered construction, low wing plastic bonded wood constructed monoplane, and Culver's built-in performance and economy of operation. We have set a high goal of a quality product that meets its guarantees and we ask only that you be the judge, on the basis of

the formula outlined above, as to whether we met that goal.

Because of the war program which has been in our plant on which we have been the sole supplier to the Army and the Navy of a special purpose airplane of our own design (the third in a series of such designs) we won't be able to immediately go into production of the Culver "V" model. There are many things such as: plant rearrangement, tooling, material procurement, and other problems incident to the conversion to commercial production. However, in order that this doesn't become a vague promise of the future, according to all information available to us Culver is as far along, if not farther, on the design of their new ship, which design and experimentation has been carried along for the past three years, as is any other light plane company. Because of this designing and the actual prototype, which Culver expects to have flying within the next few weeks, we definitely feel that we will be one of the first, if not the first, in the field with an absolutely new airplane that incorporates the concentrated design experience we have had during the war period. And at this point we can say with a certainty that the New Culver, designed for cross country, is definitely WORTH WAITING FOR.

FOR THE LATEST INFORMATION WRITE CULVER AIRCRAFT CORP., DEPT. SFJ, WICHITA 1, KANSAS

thing. You'll probably end up in Memphis because of weather and it's anybody's guess when you get to New Orleans. Furthermore they don't strap you in your seat on the train, they don't bark at you over the loudspeaker at every stop and you can smoke when the train starts up and stops."

Speaking for ourselves, and we do considerable business with the airlines, we've been luckier than our unfortunate airframe manufacturer. We hate railroad travel, especially on long trips. We don't mind being strapped in and we don't mind waiting a few minutes for a smoke on take-offs and landings. We save money (which is time) and an occasional weather delay isn't too burdensome. We know a lot of people like ourselves. But we also know some people who are downright mad at the airlines, largely due to the miserable wartime conditions under which our air transport system has operated, which isn't the fault of the airlines.

But the point is, when the new equipment goes into service, the airlines are going to have a tremendous public relations job on their hands and air transportation will have to become more dependable than it's been in the past. The railroads are out to meet this new competition and from what we observe it's going to be a mighty tough brand. They admit their mistakes of the past. When a competitor does that—then goes out to correct those mistakes, watch him closely!

☆ ☆ ☆

AN ALL-WEATHER AIR FORCE

SOUTHERN FLIGHT's editors have followed the daily official communiques issued by Allied headquarters in all theatres of combat. On many dates the weather prevented air action against the enemy. Inability to fly in bad weather grounded England-based bombers for days on end in which the Germans were allowed time to make considerable recovery from recent air attacks. Inability to fly in bad weather cost the lives of many pilots and crews caught by weather that closed in before they could return to base, or developed before they reached their destination. Ground forces, deprived of air support, paid heavily for the AAF's lack of all-weather fliers — enemy ground forces were allowed time, during periods of non-flyable weather either at the air support bases or on or behind the front—time to regroup for counter attacks, time to muster up just enough replacements or supplies to get in a nasty blow before the weather lifted.

Remember the Battle of the Bulge?

Unfortunately, the AAF ignored and neglected instrument flying technique during peace. It seldom bothered itself to operate, in tactical training, under instrument conditions, and its miserable record of hauling the mail in 1934 is testimony to that fact. All we had before the war and for too long during actual hostilities was a fair weather air arm. The AAF can lay the blame on others for inadequate combat plane strength, personnel, bases, airplane and engine research, development and manufacturing resources, all of which penalized us by delaying counter action against Japan and eventual offensives against Germany and Japan. But those were not the only major inadequacies which prevented earlier victory. The truth is that we did not have an all-weather air force. And for that the AAF itself is to blame.

The father of instrument flying was the late Colonel William C. Ocker, to whom this magazine has paid tribute before. In his experiments during the early 1930's he was officially ridiculed and held in disfavor. A commanding officer once ordered him to undergo a sanity examination because he practiced instrument flying by hanging a turn and bank indicator on his Army biplane and attempting to fly through clouds. Years later the Air Corps had not recognized instrument flying but Pan American Airways incorporated Ocker's technique in its Mexico operations, Russia used his writings as an official text, and Germany obtained State Department permission for its attache to take down a long, detailed personal statement from Ocker outlining the general theory of instrument flying and how to develop training for it.

But that's past history now. The final indisputable indictment against the AAF is the record that shows how the weather grounded its combat planes for hundreds of days during World War II. Victory was through Air Power, but that victory was delayed when Air Power was stopped dead on the ground by clouds and overcast; the weather was a more effective enemy than the Luftwaffe, which never once turned back a U. S. bomber force.

Finally, in 1943, the AAF took action. A veteran airline pilot, Colonel Joe Duckworth, who spent years on Eastern Air Lines to acquire an intimate knowledge of instrument flying, eventually convinced the AAF that its instrument training under the mechanical "1-2-3" system was so ineffective as to be almost worse than none at all. He devised what he called the "full panel system," using the complete range of modern instruments, and conducted an experiment which proved his point. Duckworth was authorized to draw up a new course of instruction and establish a central school for instructors at the Bryan (Texas) Army Air Field.

The eminent success of the system and the school is now well known. Several thousand Bryan graduates were just beginning to make their uncanny ability to fly on instruments, even through the most violent thunderstorms and hurricanes, recognized and respected throughout the military establishment.

Today, the fate of the AAF's instrument training school hangs in the balance. Abandonment of the Bryan school, its system of instruction, its equipment and personnel, would be catastrophic. No stone must be left unturned to preserve these irreplaceable facilities and to guarantee that the process of converting the AAF to an all-weather air arm continues without interruption. We can not raise the dead who paid for the blindness of their leaders; but we can and must guarantee that the reprehensible neglect of scientific instrument training in the prewar years will not occur again.

☆ ☆ ☆

THIS YEAR'S CLINIC

ACCEPTANCE by President Harry S. Truman of an invitation to deliver the opening address at the 1945 National Aviation Clinic in Oklahoma City next month is a signal achievement by the Clinic directors. Heretofore, Presidents of the United States have been content to deliver their greetings to aviation conferences *in absentia*.

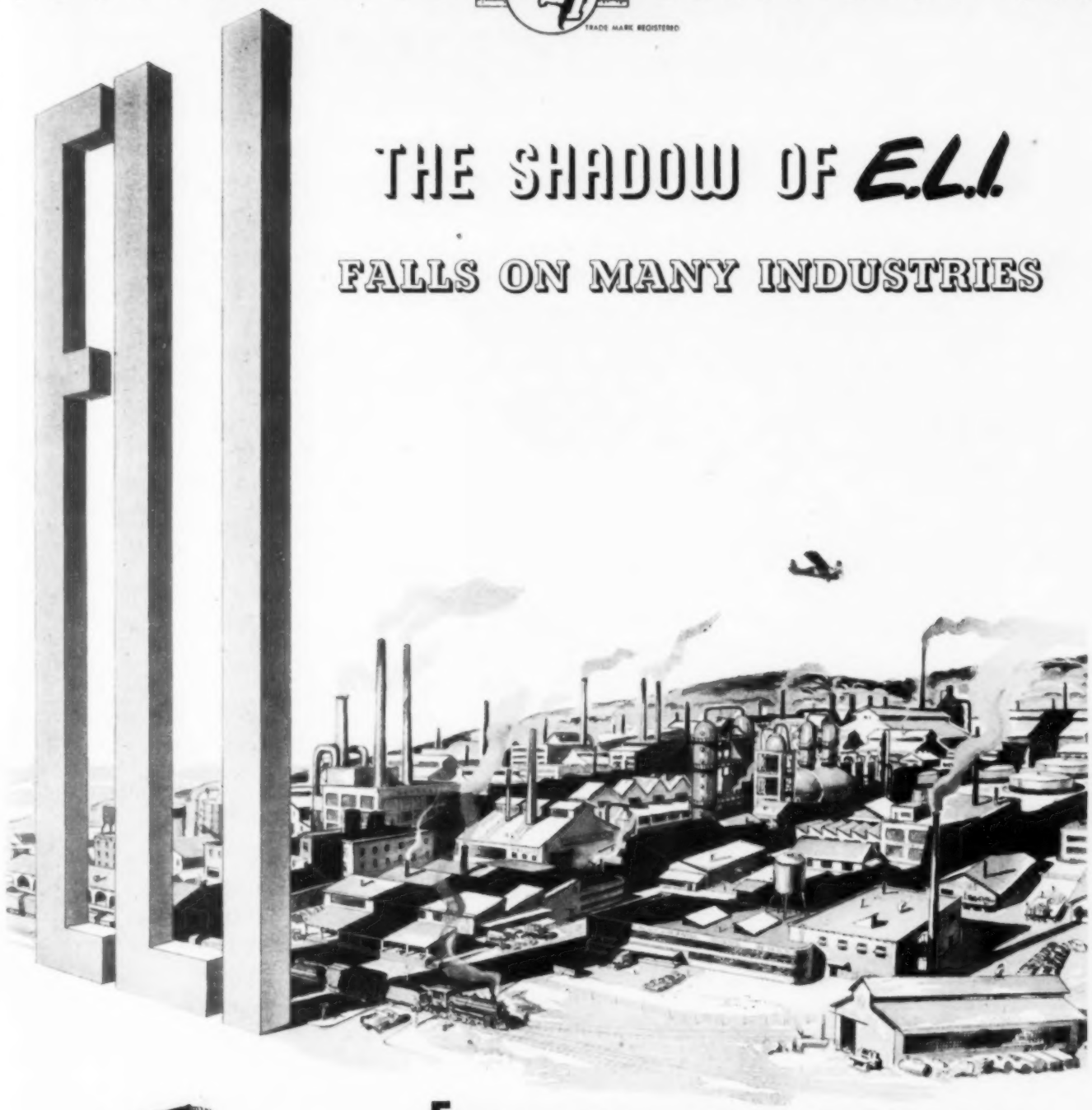
Truman's presence will focus international as well as complete national attention and interest on the Oklahoma City convention. The Clinic, with two years of experience behind it, has a brilliant opportunity to produce great things for the full aeronautical development of this nation during the next twelve months. From where we sit it appears that the Clinic sponsors and hard-working leg-men are on the job and intend to make the affair the most productive and beneficial aviation convention ever held.

EQUIPMENT IN E L I WORLD-WIDE USE

TRADE MARK REGISTERED

THE SHADOW OF E.L.I.

FALLS ON MANY INDUSTRIES



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602-624 East Fourth Street Tulsa 3, Oklahoma, U. S. A.

The Birdmen's Perch

By *Major Al Williams,* ALIAS, "TATTERED WING TIPS,"
Gulf Aviation Products Manager, Gulf Bldg., Pittsburgh 30, Pa.

THAT'S **an action picture of the hottest pilot in the Navy at work.**

He's a night fighter (VF-N) or torpedo (VT-N) pilot and his gold wings hardly do him justice. Wings only signify that a fella can fly.

This guy can fly, all right! He can get an F6F or an F4U or a TBF off a carrier, complete a mission and get back on his carrier . . .

. . . and he can do it at night during a storm!

He flew Combat Air Patrol over Task Forces at night, so that day fighters got needed sleep . . .

He got over Nip bases and kicked 100 pounders out all night long so the slopeheads *didn't* get needed sleep . . .

When they wanted to make something of it, he whistled down and smacked 'em before they even got off their runway . . .

He led day groups to the target on predawn strikes, with his special electronic equipment . . .

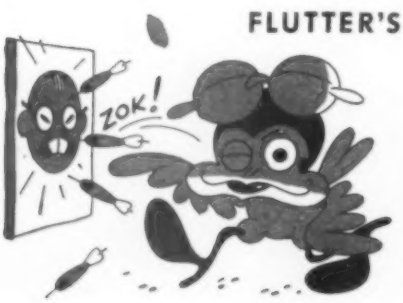
He led them back to the carrier when night fell during a mission, too!

The Gloom Glamor Boy of the Fleet *begins* his night training as one of the Navy's best pilots! Because only a qualified pilot whose flight work is flawless, whose navigation is perfect, and who has a high-compression I.Q. gets through the flint-eyed selection board.

Then he studies and trains for 9 solid months—even though he's flown combat with the Fleet! When he's through, he's jammed so full of so many sciences and skills (electronics, night-indentification, special navigation, etc.) that it doesn't seem possible.

But it was!

FLUTTER'S DITTY BOX:



Said a Nippo CO, "Nighttime fleat!...
We fly out—sink Amellican Fleet!"
But a night fighter group
Splashed 'em all in the soup.
Hissed the Nip, "Solly, so indiscleet!"

INSTRUMENT COURSE

(CONTINUED)

Oil Temperature

Excessive oil temperature may be caused by any of the following:

a. Insufficient oil.

(Put some more Gulfpride in the oil tank!)

b. Diluted or contaminated oil.

(The Alchlor Process super-refines Gulfpride—but it can't change it for you!)

c. Wrong viscosity or grade of oil.

(Sure you're getting Gulfpride in the grade recommended by the engine maker?)

d. Prolonged overheating of engine.

(Watch that gage!)

Gulf Oil Corporation and Gulf Refining Company...makers of

GULF **GULF AVIATION PRODUCTS**

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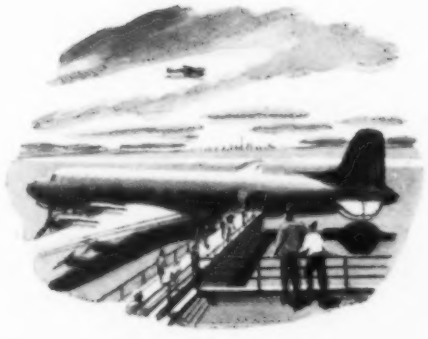
The plane that flew 20 years — IN THREE



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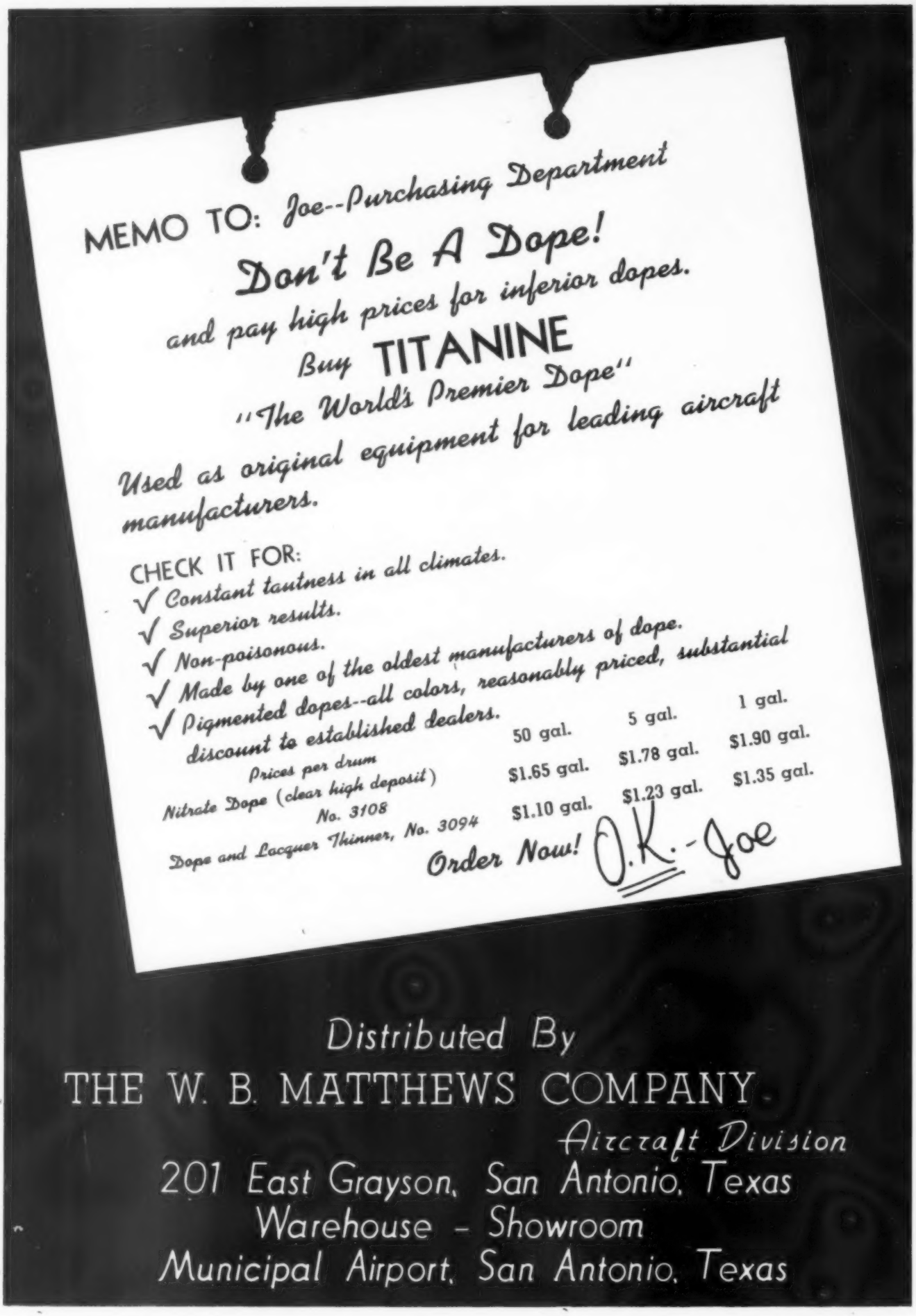
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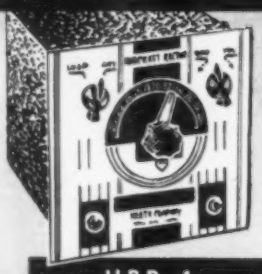
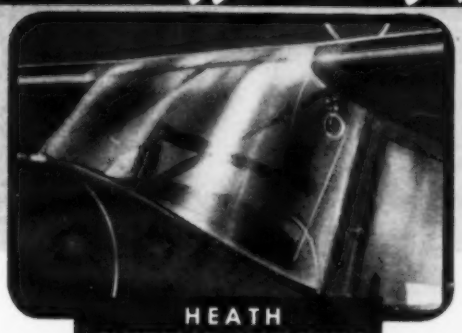


HBR-4 RECEIVER



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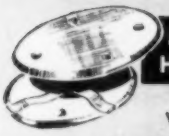

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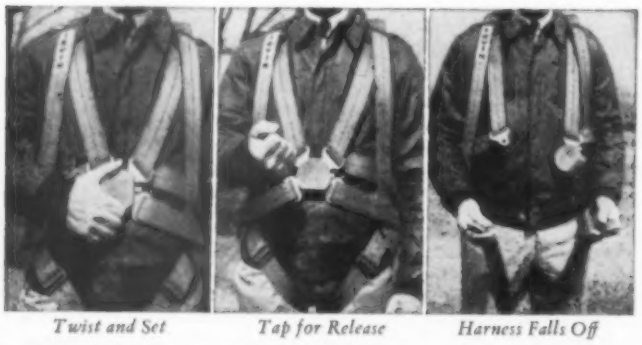
are using it for

SAFER LANDINGS

A one-hand turn and a tap on the single frontal disk instantly releases the harness . . . leaving the flyer entirely free. Accidental release is impossible before disk is "set" for action.

All United Nations' Air Forces for years have used IRVIN as standard equipment . . . and now the Irvin "Single-Release" harness is acknowledged as superior for all landings. IRVIN, as always, leads in Safety.



Twist and Set *Tap for Release* *Harness Falls Off*

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Complete Factories in Buffalo, N. Y., Glendale, Calif. (1500 Flower St.), and Lexington, Ky., U. S. A. . . . Canada, England and Sweden . . . All Serving the United Nations' Air Forces.

BUY MORE WAR BONDS

AIR REPORT

☆ SIGNIFICANT TRENDS IN THE NEWS

Private Plane Production

Optimistic predictions concerning immediate resumption of personal aircraft production in sufficient quantity to satisfy the demand are now on the wane. The majority of the personal plane builders, who previously had hoped for "volume" production by Christmas, don't expect to hit their stride until next Spring. One manufacturer suffered a strike, another ran into difficulties with and abandoned use of a new engine, while a third is encountering serious tooling troubles—just to mention a few of the negative factors now cropping up. Informed circles are talking now in terms of fifteen to eighteen thousand units the first full year of postwar production instead of previous estimates of 25,000 airplanes and up. Also apparent is the fact that most of the new and hopeful contenders for a share of the market still can't show an Approved Type Certificate.

★ ★ ★

CAB Vacancy

One of the most significant and important public appointments in aviation will be made soon when the CAB vacancy created by the resignation of Dr. Edward P. Warner is filled by President Truman. Hottest subject in Washington at presstime revolves around the candidates for this post. Frequently mentioned are CAA Deputy Administrator Charles I. Stanton, S. Paul Johnston of the U. S. Navy and onetime editor of "Aviation," and Harold Hartney, Washington aviation consultant. One disconcerting but widely circulated rumor was to the effect that the President had offered the post to isolationist ex-Senator Gerald P. Nye. Reassuring was the report that General Jimmy Doolittle had been approached. Practically everybody in aviation is begging for a man adequately qualified to replace technically trained Ed Warner. One small but not-too-vociferous segment of non-scheduled aviation, critical of the Board's primary interest in the problems of scheduled air transport, wants to see private flying interests represented by the new appointment. One high official in the Department of Commerce, when asked about Stanton's qualifications, summed up the situation remarkably well when he agreed that Stanton was eminently qualified from a technical standpoint, but the question is, "Does Truman know him?" Odds are now about 50-50 that the President will make a political appointment without too much concern over technical qualifications or aviation background. By law, he'll have to appoint a Republican.

★ ★ ★

Air Victory In Surplus

Look for an immediate improvement in basic government policies in the handling of surplus aircraft sales. Reason for the improved outlook is the appointment late in September of Dick Depew, veteran flier and aviation executive, as chief of the RFC's aircraft disposal section. Depew steps in at a time when a number of progressive and practical measures were being toyed with by topside surplus disposal officials; it is generally believed that Depew, with his broad, technical knowledge of aviation, will rapidly streamline and clarify policies and expedite the sale of surplus equipment without jeopardizing the best interests of commercial aviation and private flying. Non-aviation surplus officials, who created so much confusion and ill-will because of their blunders and ignorance, are now expected to drop some authority into qualified aviation hands.

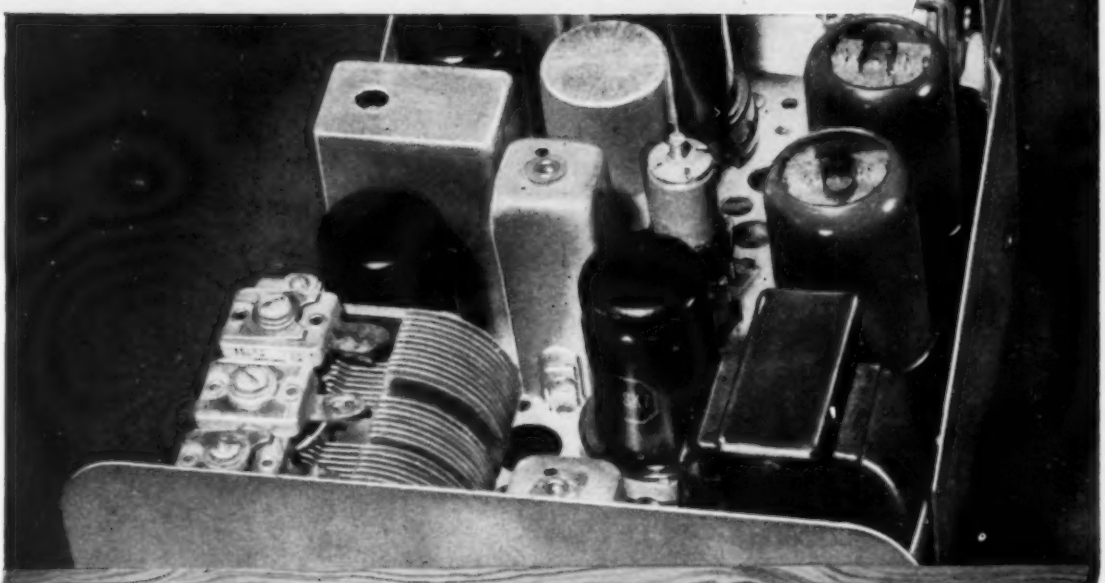
★ ★ ★

CPT Revival Effort Needs Support

The CAA has submitted to the Bureau of the Budget a request for $3,250,000 for resumption of the Civil Pilot

The PXer

by LEAR, Incorporated



A New Low-Cost Transmitter-Receiver for the Private Flyer

As soon as the bars come down, private flyers will have available a new high-efficiency radio such as they've never seen before—the Lear PXer.

All of Lear's experience with aircraft radio since 1930, plus the great advances made during the war, are reflected in this new, compact, low-weight radio instrument.

It is far-reaching, easily installed, dependable, and low in cost.

This is a transmitter-receiver flyers have always wanted. Perhaps you would like to be distributor for it and other Lear Radios. Some valuable territories are open to qualified representatives.

If you are interested, get in touch with us. Write LEAR, Incorporated, Aircraft Sales Department, 110 Ionia, N. W., Grand Rapids 2, Michigan — Phone: 6-9651, Ext. 52.

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3 Popular Models of the ★★★ WALLER COMMUNICATOR LINE

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Also a complete line of two-way radio combinations for light airplanes. Expertly engineered and built to the most efficient performance standards.

The Model B 40-813 is an ideal transmitter for multi-engined aircraft. Standard equipment with Oil Companies.

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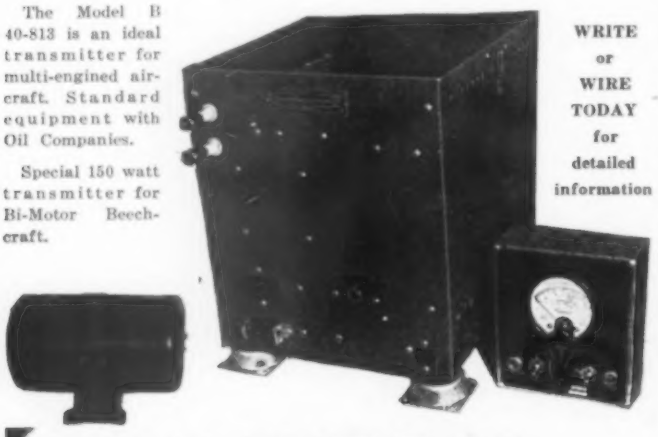

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Training Program. If approved by the Budget Bureau, the request would be forwarded to Congress as a supplementary appropriation bill, and successful action on it there would mean the CPT program would be reinstated for the first six months of 1946, with a goal of about 15,000 pilots to be trained. As in the prewar program, the plan provides that the Federal government subsidize training of students recruited through educational institutions, with private operators furnishing the flight work under contract to the institutions; the student and the sponsoring institution would pay 25 per cent of the cost and the U. S. subsidy would cover 75 per cent of it. The biggest hitch is that there's not much hope for reinstatement of CPT unless the colleges and sufficiently strong aviation interests get together and bring pressure to bear—especially the colleges and universities. That's the main point, and it doesn't appear likely to happen.

★ ★ ★

Lightplanes by North American Aviation

J. H. (Dutch) Kindelberger, president, said in Dallas recently that North American Aviation, Inc., is considering making lightplanes. He gave no details but said his engineers were working with "several" ideas. It has been learned, however, that NAA is considering two-place and four-place all-metal types. Contrary to some expectations, General Motors' new two-cycle aircraft engine is not involved in the project at this time.

★ ★ ★

Spotlight on Howard Hughes

Efforts of Howard Hughes to manufacture a high-performance photo-reconnaissance plane for the AAF and the world's largest flying boat are being studied. Latest development is a Washington "Post" article charging that Hughes "ran through" between $18,000,000 and $66,000,000 of government money, "with the help of his friend Elliott Roosevelt" in his unsuccessful warplane enterprise. Close observers have watched for some time developments on Hughes' mammoth plywood flying boat, for which the RFC guaranteed $18,000,000 but which hasn't flown yet. In September the Hughes boat suffered another serious setback involving difficulties in its wing. But details of the reconnaissance plane deal haven't been as well known. According to the "Post" article, the Army's contract termination experts are now wrestling with a $48,555,000 plus 4 per cent order placed by the War Department in 1943 for 100 Hughes-designed "DX" reconnaissance planes. The only DX to be test-flown crashed and was destroyed. Two were 95 per cent completed on V-J Day. The late President's son, who has been credited with playing a prominent part in developing the AAF's excellent photo reconnaissance work, is said by the "Post" to have "influenced" the Army's interest in the uncompleted Hughes DX project, which was opposed by the Air Service Command but favored by General H. H. Arnold. Incidentally, Hughes has invested several millions of dollars from his personal fortune in the flying boat fiasco.

★ ★ ★

Search for Safety

Well-founded concern over a wave of unnecessary accidents in non-scheduled flying has gripped many segments of the industry including the insurance companies, national aviation organizations, the air transport industry and manufacturers of private-owner type airplanes who believe that an excessive accident rate will jeopardize the excellent chances for a healthy boom in private flying. Chief cause of worry is the large number of discharged military pilots who are unfamiliar with small, low-powered private-owner types and the rapidly growing list of student and private pilots encouraged by simplified regulations whose psychological reaction to the new CAR is one of complete freedom and laissez-faire. Result will be a centrally directed and closely co-ordinated national air safety campaign with all interests participating. Another development will be lower insurance rates for the "safe" pilots who fly "safe" airplanes as against high or prohibitive rates for the reckless pilot and for airplanes with poor safety records. ★ ★ ★

Main Cabin – Boeing Stratocruiser

BUY VICTORY BONDS

Chasing the sun

You left the East Coast at one o'clock after a good lunch. Now, stretched out in a big, cushioned easy chair, you watch cloud patterns shift on the green and gold checkerboard of Ohio farmland below.

You're flying high, where the air is smooth, yet the atmosphere in the big Boeing Stratocruiser is held at the same comfortable pressure as at low levels.

You and some 80 other passengers are traveling at 340 miles an hour—yet the sound of four 3500-horsepower engines is only a low hum in the insulated cabin.

The twisting ribbon of the Mississippi gleams beneath you and then you're over the wide prairie. You read a little, nap a little. Soon you're looking down on snow-capped mountains "How about a rubber of bridge, down in the lounge?" your neighbor suggests.

At the foot of a spiral stairway you enter a roomy, comfortably furnished salon, where a congenial group has gathered. When the West Coast comes into view it's still afternoon. You've gained three hours on the sun that hangs high above the Pacific as the great plane lowers smoothly to a landing!

This is no Jules Verne fantasy. It may be your own experience before long—at a fare even lower than present rates, for the Stratocruiser is capable of carrying a greater payload at a lower operating cost than any previous transport.

The aerodynamic advancements built into the Stratocruiser have been thoroughly war-tested in the B-29 Superfortress and are the result of Boeing's long experience in the design and development of other four-engine aircraft such as the Flying Fortress, Stratoliner and Clipper. The C-97, military version of this first super-transport of the future, is proving itself in the air today!

With victory won, the same skill in design, engineering and manufacture which has established Boeing leadership in the big bomber field will bring you the Stratocruiser and other advances in air transport. You can be sure . . . if it's "Built by Boeing" it's out in front.

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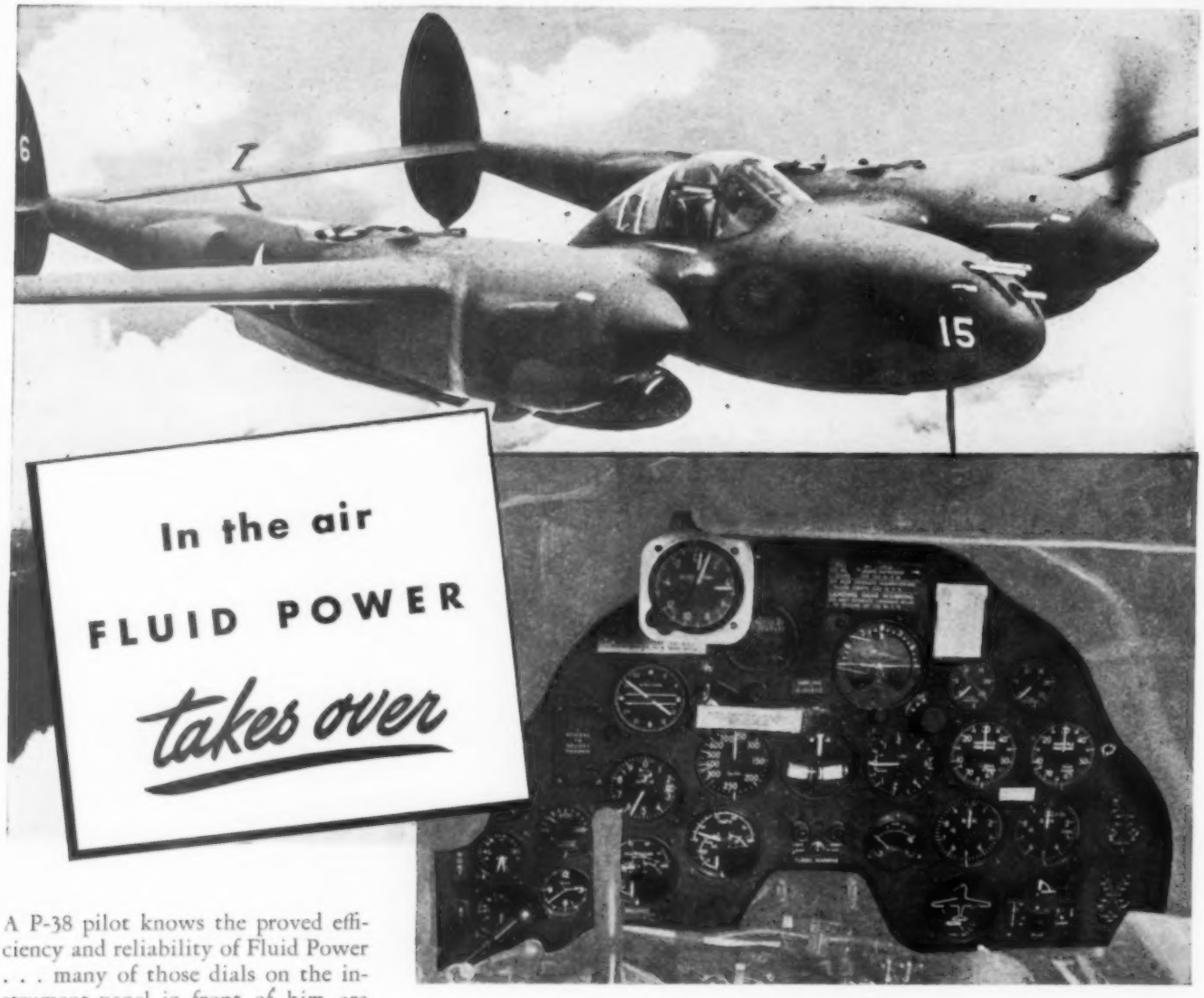

In the air FLUID POWER *takes over*

A P-38 pilot knows the proved efficiency and reliability of Fluid Power . . . many of those dials on the instrument panel in front of him are telling a constant story of Fluid Power at work.

Wing flaps, ailerons, radiator flaps, landing gear, brakes—all are Fluid Power operated and controlled in the P-38. In addition, engine primers, fuel tank selectors, together with fuel, oil, vacuum and oxygen systems, are functioning components of the ships as a result of Fluid Power Engineering.

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In the aircraft industry the name "Parker" signifies precision workmanship, reliable quality and engineering perfection. This same reputation distinguishes Parker products used in every industrial Fluid Power application.

While working under the stringent design and performance requirements of aircraft building these many years, the Parker organization has uncovered many new Fluid Power possibilities which have been successfully introduced into new and diversified industrial applications. There is doubtless one to fit your needs. Address—The Parker Appliance Company, 17325 Euclid Avenue, Cleveland 12, Ohio.

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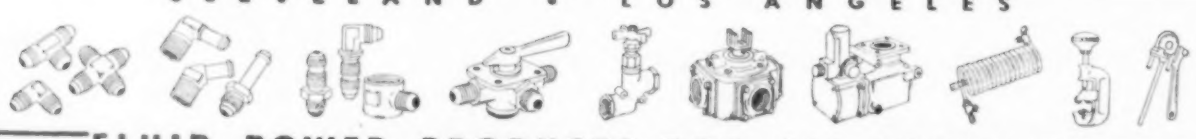
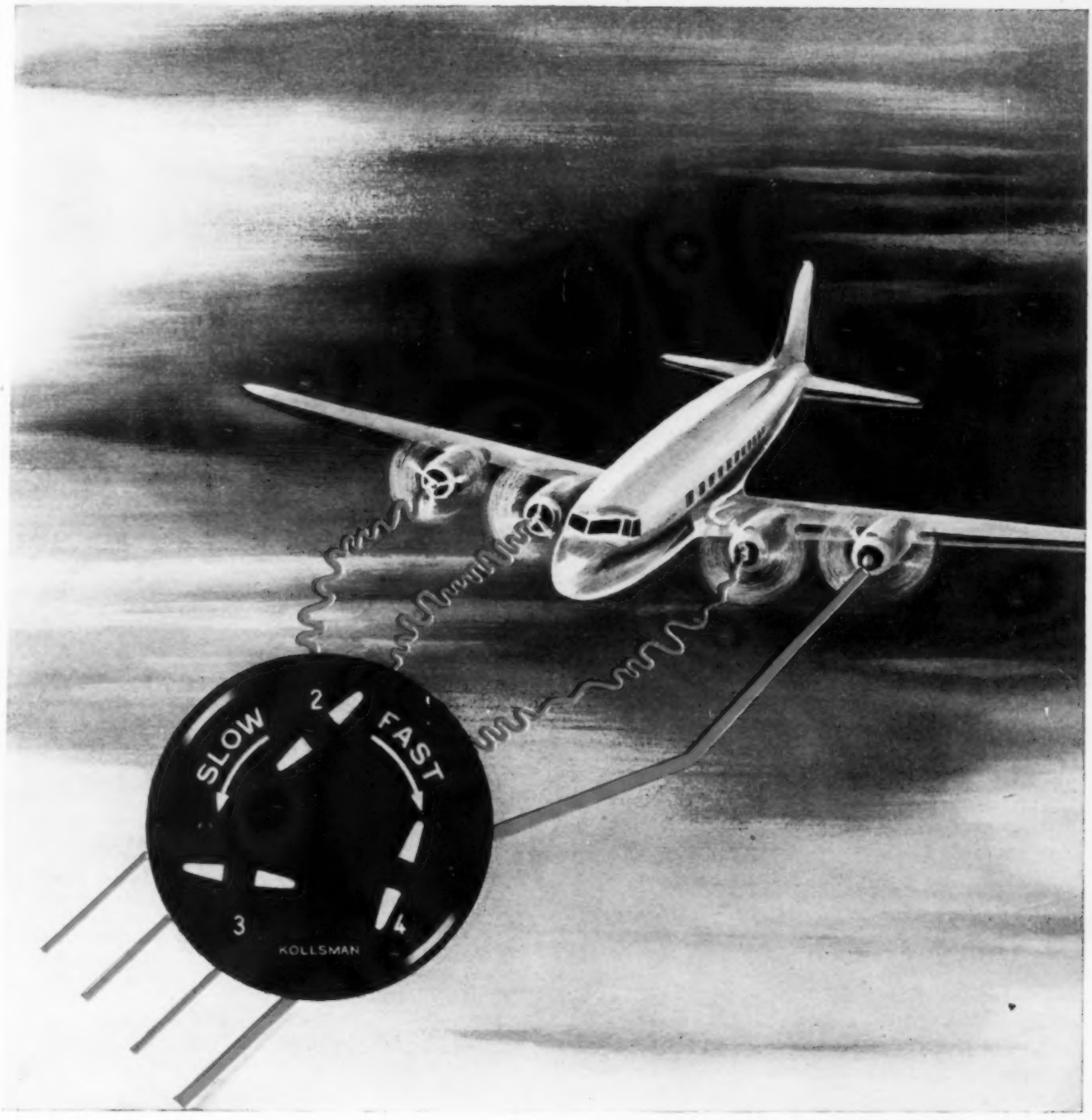


FLUID POWER PRODUCTS FOR ALL INDUSTRY



THE NEW KOLLSMAN FOUR-ENGINE SYNCHROSCOPE enables the pilot or flight engineer to bring all engines quickly to the same r.p.m. for the uniform power output required by economy and correct operating procedures. Designed at the request of AAF to cover military needs, these synchroscopes also have their application to transport aircraft, where they contribute to passenger comfort as well as to proper operation of the plane. The accuracy and dependability of these synchroscopes, together with their simplicity of operation, are characteristic of all Kollsman Aircraft Instruments.

KOLLSMAN AIRCRAFT INSTRUMENTS

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REVVING UP

(Continued from page 6)

range in size from 64 inches in diameter, used by the Navy, to 12 inches in diameter, used in airplanes. Most common are 37-inch and 24-inch screens, according to Pittsburgh Plate Glass Company.

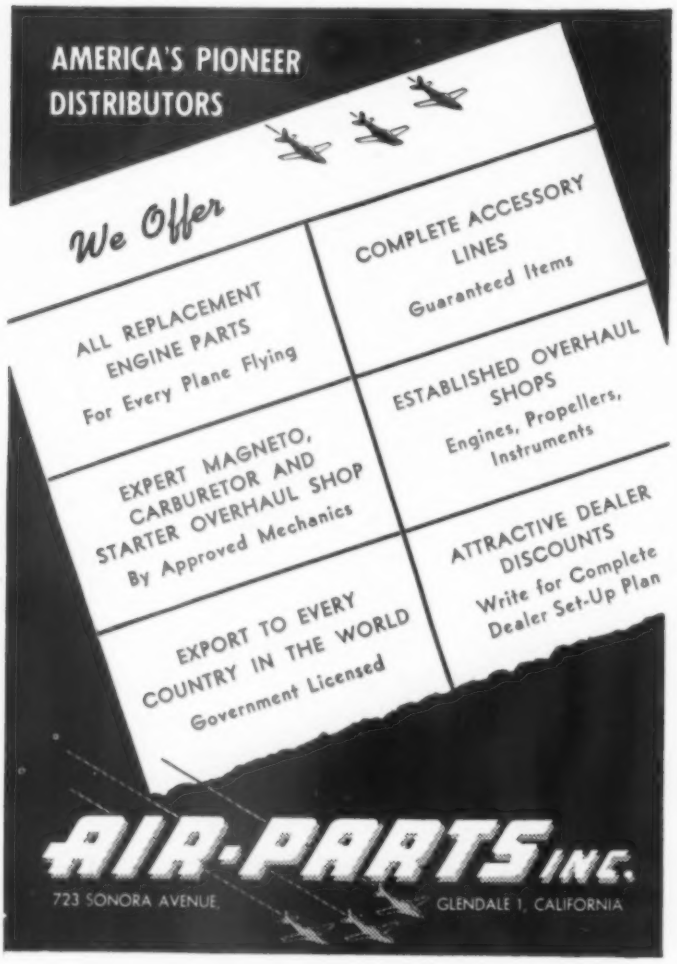
The first postwar production model Ercoupe has been completed and thirty to forty airplanes are expected to be turned out during October, with Engineering & Research Corporation shooting for a production of 500 units by January 1. George Ryan is the new sales manager for Ercoupe.

Notices to Airmen henceforth will be published twice a month instead of weekly, due to budget cuts in the Civil Aeronautics Administration.

A four-place airplane is expected to follow the two-place Swift on production lines at Globe Aircraft Corporation in Fort Worth.

North American Aviation, Inc., production experts had reduced the P-51 fighter down to about 900 man hours per plane and the AT-6 trainer down to about 700 man hours per plane by V-J Day.

CHRISTMAS TREE ROCKET LAUNCHERS, installed on latest Lockheed P-38's, required no wing structure changes and did not detract from performance after rockets were fired. Each cluster carries five 5-inch rockets, which proved effective against Japanese pillboxes, caves and underground fortifications.
—(Lockheed Photo).



Only fatal accident involving an Army Air Forces helicopter within United States occurred in Florida, killing two AAF test pilots when rotor blades were lost at 2,000 feet.

Benny Howard, famous for his prewar flying and now assistant to the president of Douglas Aircraft Company, has won the plaudits of many production men for his outstanding accomplishments in business matters as well as for his flight testing and research work. Those who have seen him operate in Douglas' "front office" and engineering departments say Benny is one of the industry's best all-round business executives. He's Donald Douglas' right-hand man.

Southern Aircraft Corporation of Garland, Texas, will produce custom-built twin-engine executive transports to sell for approximately $25,000. The firm has invested heavily in a radically-designed personal airplane, and in addition is marketing metal kitchen equipment for homes.

Vincent Burnelli, who has been operating in Canada, is looking for a surplus war plant in the U. S. for production of his transport designs utilizing the fuselage for lift. Latest Burnelli developments, incidentally, will be covered in an article appearing in SOUTHERN FLIGHT for November.

Short Snorts: In spite of the fact that the Interdepartmental Air Traffic Control Board will be liquidated in the near future, CAA hopes to preserve the present simplified system of designating airports until federal licensing of airports is provided for, reason being that designation requirements are the only means by which important information about all airports can be gathered and kept current. . . . Some last-minute gleanings of important personal notes reveal the following: John O'Hara Harte has gone with Menasco Manufacturing as director of public relations; Lt. Leon Shloss, formerly of Navy public relations, is now assistant editor of "Popular Science Monthly"; Jack Nelson, special assistant to CAA administrator T. P. Wright and member of the non-scheduled aviation advisory committee, has resigned his post to join Wayde Stewart, Parkersburg, West Virginia, airport operator and airplane distributor; Ken Ellington, East Coast Aircraft War Production Council, has accepted the post of director of public relations for the Republic Aviation Corporation. . . . The flavor of old times is in the announcement that the All American Air Maneuvers, abandoned during the war, will be held again in Miami next January; all that's needed now, says private pilot Joe Blow, is word from Al Williams that Gulf again will sponsor a lightplane cavalcade and furnish the gasoline! . . . Definite plans are now shaping up to reinstate the National Air Races at Cleveland, Ohio.

YAK III RUSSIAN FIGHTER, one of more than forty brought home by the French Normandie Escadrille as a gift from Russia, was reported by French pilots to be superior to Focke Wulf 190 up to about 9,000 feet. U. S. pilots and an American Red Cross club worker are shown inspecting it at Le Bourget.
—(American Red Cross Photo by Al Taylor).

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MODEL A-12

GYROPILOT*

THIS SIMPLE control unit gives the human pilot complete automatically stabilized control of his aircraft at all times.

A-12 FOR . . .

- Automatic approach and automatic landing
- Perfectly banked turns at *any* air speed—automatically
- Gyrosyn Compass directional control—continuously slaved to the magnetic meridian
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- Utmost in passenger comfort—precise control and elimination of over-control, "hunting," and "wallowing"
- Electrical and mechanical interlocks—automatically insuring proper manual operation
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- Maximum ease of installation and simplified maintenance—any unit can be replaced in a matter of minutes

Our Aeronautical Department invites your inquiries on A-12 Gyropilot installations.

*TRADE-MARK REG. U. S. PAT. OFF.

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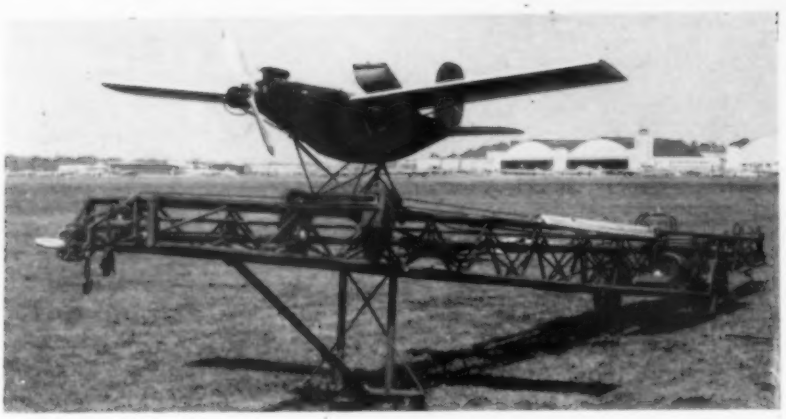
Logging The Coast

By.. Midge Winters



RADIO-CONTROLLED target plane, the OQ-14, is poised on its catapult before take-off at Air Technical Service Command headquarters at Wright Field. It has a wingspan of 11 feet 6 inches. —(ATSC Photo.)

NOW it can be told that the only answer to the kamikaze attacks in the Pacific was an ingenius training device, the radio-controlled, pilotless target airplane developed by Radioplane Co., Van Nuys, California.

The restricted lid blew off with the announcement that this truly expendable radioplane had been used throughout the war, in all theaters, as target for gunnery practice by aerial and ground forces of the Army and Navy.

Flying at speeds ranging from 100 to 200 miles per hour at altitudes up to 3,000 feet, the target planes were controlled entirely by radio from the ground and actually simulated combat tactics which eventually led to the training of gunnery crews in beating off the kamikazes.

The radioplane has more recently found another use, that of a training aid for students of radar in tracking flying objects in the air for gunnery practice.

Dates Back to Early 30's

The radioplane, which closely resembles in miniature any conventional high wing, single-engined plane, was conceived in the early 30's by Reginald Denny, actor, who built a radio-controlled model airplane. Its possibilities immediately became evident to the AAF, and an experimental contract for three units was made with Radioplane Co., which took over its development. Working in co-operation with the project were Major M. Powers, Col. George V. Holloman, and Col. Rudolf Fink, then of Wright Field. It was in use by the Army Air Forces before Dunkirk, and when the United States went to war, radioplanes began to roll off the production lines at a rapid rate. According to officials of Radioplane, development proceeded through several models, eventually boiled down to two standard equipment models, the Army OQ-3 (Navy TDDT) and the greater powered Army OQ-14 (Navy TDD-3).

The OQ-3 is a high wing monoplane, 9 feet long, with a wing span of 12 feet, 3 inches. It weighs 100 pounds and is capable of flying 103 miles an hour. It is constructed of welded steel tubing covered with airplane fabric. The engine is an 8 hp., 2-cylinder, 2-cycle gasoline engine.

The OQ-14, a later model, has a wing span of 11 feet, 6 inches, and is powered with a 22 hp. engine. This model will fly 140 miles an hour, carries a 5-gallon fuel tank giving it in excess of an hour's flying time.

Now in construction, but withheld on the secret list, is still another model, all metal, which will fly in excess of 200 mph.

Catapult Take-off

Take-off is accomplished by the use of a catapult, also designed by Radioplane, powered by compressed spring coils or rubber shock cord, operated either from the ground or shipboard. After launching, the target is radio-controlled and operated by elevator and rudder controls only. Landing is made by parachute, released either by the control operator or automatically as a result of damage from vital hits.

The basic system of radio control for the target involves the use of an ultra-high frequency carrier wave, modulated by five different audio frequencies. A small control box, attached to the transmitter by means of a flexible extension cable, equipped with a stick to simulate actual airplane control, is used to select the proper radio signals.

Four audio-frequency tones are used to control the target airplane in flight, one each for left, right, up, and down. A fifth frequency holds the parachute until it is released for landing. Only one of these audio frequencies is used at a time. When one of the control frequencies is not in use, the fifth, or parachute frequency, is automatically switched on.

Installed in the plane is a radio receiver selector, which translates the radio waves and actuates, by electrical energy, the servo unit provides the plane. The servo unit provides the mechanical action to control the elevators and rudder. Operation has been so simplified that anyone without previous experience can learn to fly the target plane in six hours.

Assembly Line Production

Assembly lines at Radioplane Co., occupying 69,500 sq. ft. of plant area, are virtually the same as any aircraft plant — in miniature — and employ about 350 people. Radioplanes, different from any type of pilot-manned plane, are not test flown but bundled up, partially assembled, in crates resembling overgrown coffins and whisked off to bases all over the world. Every tenth one, however, is completely assembled and test flown for balance, etc. Mass production methods and improved design have enabled the Radioplane company to reduce steadily the cost of the radio-controlled targets from the original $4,000 per unit to the present unit price of less than $600. At the height of the war, radioplanes rolled off the lines at the rate of forty units plus per day.

Postwar Plans

Postwar plans of the radioplane, of course, include further development for military training programs. And while Radioplane Co. has other ideas of how the device might be adapted to civilian or peacetime uses, those ideas remain "trade secrets." Suffice it to say that the Radioplane development is the "grandpappy" of all radio-controlled plane equipment in experiment today under the stuffiest of wraps.

President of the corporation is Whitley C. Collins, formerly general manager, treasurer and director of the original Lockheed Aircraft Company and director of Menasco Manufacturing Co. Executive Vice President Harold H. Powell has a background of engineering with General Electric and H. M. Byllesby Engineering and Management Corp., was one of the organizers of the National Air Transport Co. All engineering and development is under the direction of Ferris M. Smith, former project engineer with Douglas and Lockheed.

★ ★ ★

Progress Report

Poised for flight, but with apparently no place to go, the sleek, little Ensign, two place, low wing plane built by All American Aircraft, Inc., was wheeled out for a press preview recently. Topped with a huge bubble, which brings head and shoulders of

(Continued on page 78)

ALL AMERICAN AVIATION

AMERICAN AIRLINES

AMERICAN EXPORT AIRLINES, INC.

BRANIFF AIRWAYS, INC.

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MAGNETOS

SCINTILLA MAGNETO *DIVISION*, SIDNEY, N. Y.

ARMY E NAVY

PRODUCT OF Precision Equipment Bendix AVIATION CORPORATION

A NEW CONCEPT IN AIR TRANSPORT
THE
Martin 202
Willard Downs

Obsoleting all commercial aircraft of her class, the Martin Two-O-Two provides much higher speeds, more luxurious accommodations and more cargo space than any transport of comparable size. Low direct flying costs and maintenance costs assure profitable airline operation—at fares below first-class railroad rates. Here are some reasons why:

- Cruises at a speed approaching 300 m. p. h.—upward of 100 m. p. h. faster than present day transports.
- On a 250 mile city-to-city hop, direct flying costs, exclusive of operating overhead, are less than one cent per seat mile.
- Carries 30 to 42 passengers—in luxury unsurpassed by even the largest 4-engine air liners flying today.
- Utmost passenger comfort assured by comfortable roomy seats, plenty of head room and leg room, large windows, modern heating, ventilating, sound proofing and lighting.
- Has far more cargo and baggage space (525 cu. ft.) than any transport of comparable size.
- Three large exterior doors, and two large doors between passenger and cargo compartments, permit swift loading and unloading to cut waiting time at airports.
- Will utilize every new electronic device, including radar, to permit all-weather flying.
- Embodies such improvements as reversible pitch propellers, heat anti-icing, laminar flow wings, tricycle landing gear.
- Flexible Mareng fuel cells cut maintenance costs and contribute to safety.
- Equipment is located below floor, easily accessible for servicing through exterior hatches.

THE GLENN L. MARTIN COMPANY, BALTIMORE 3, MD.

The PV-3 10-passenger transport helicopter developed by the PV Engineering Forum, Sharon Hill, Pa. Power by Continental.

FIRST TRANSPORT HELICOPTER!

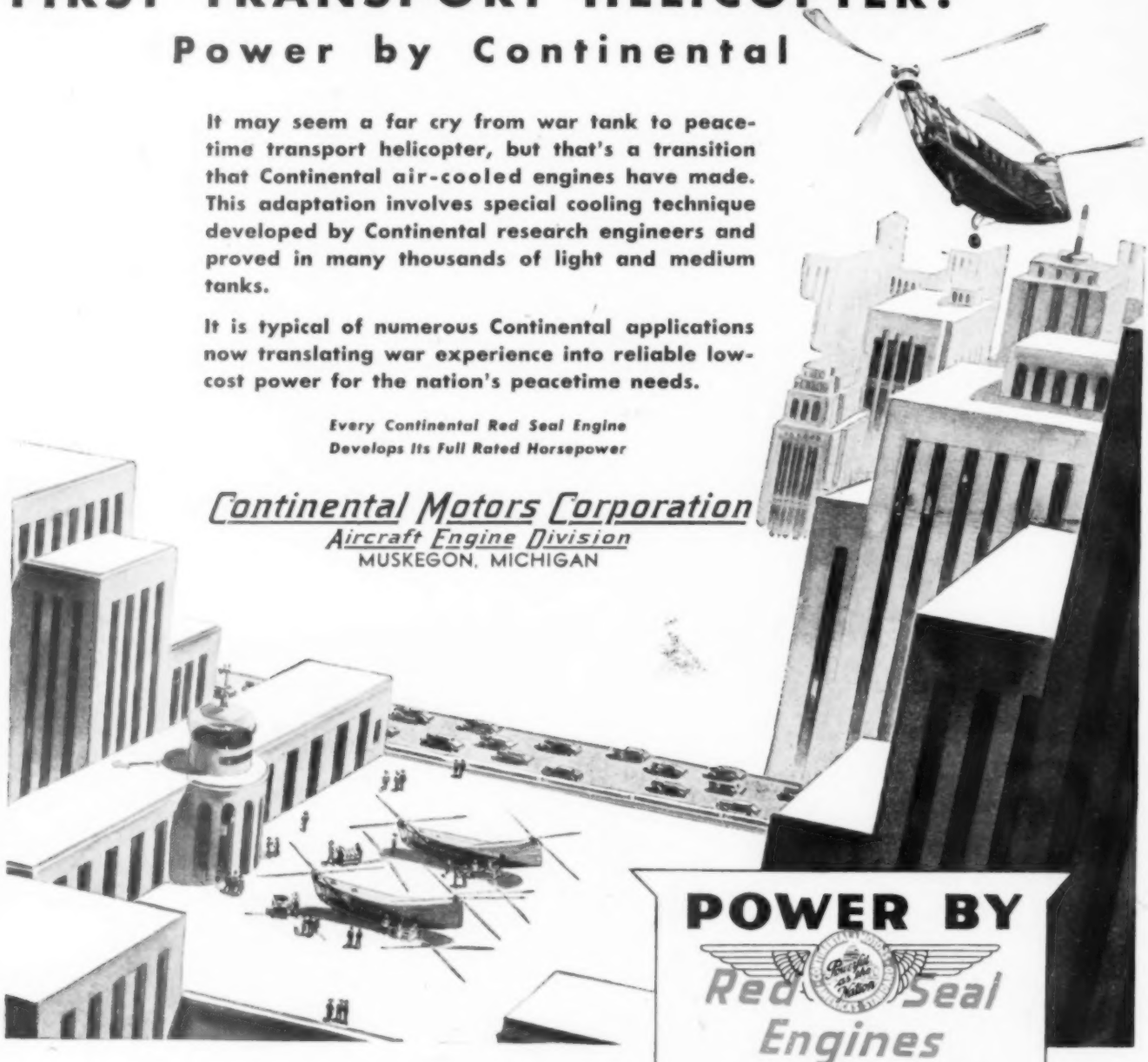
Power by Continental

It may seem a far cry from war tank to peacetime transport helicopter, but that's a transition that Continental air-cooled engines have made. This adaptation involves special cooling technique developed by Continental research engineers and proved in many thousands of light and medium tanks.

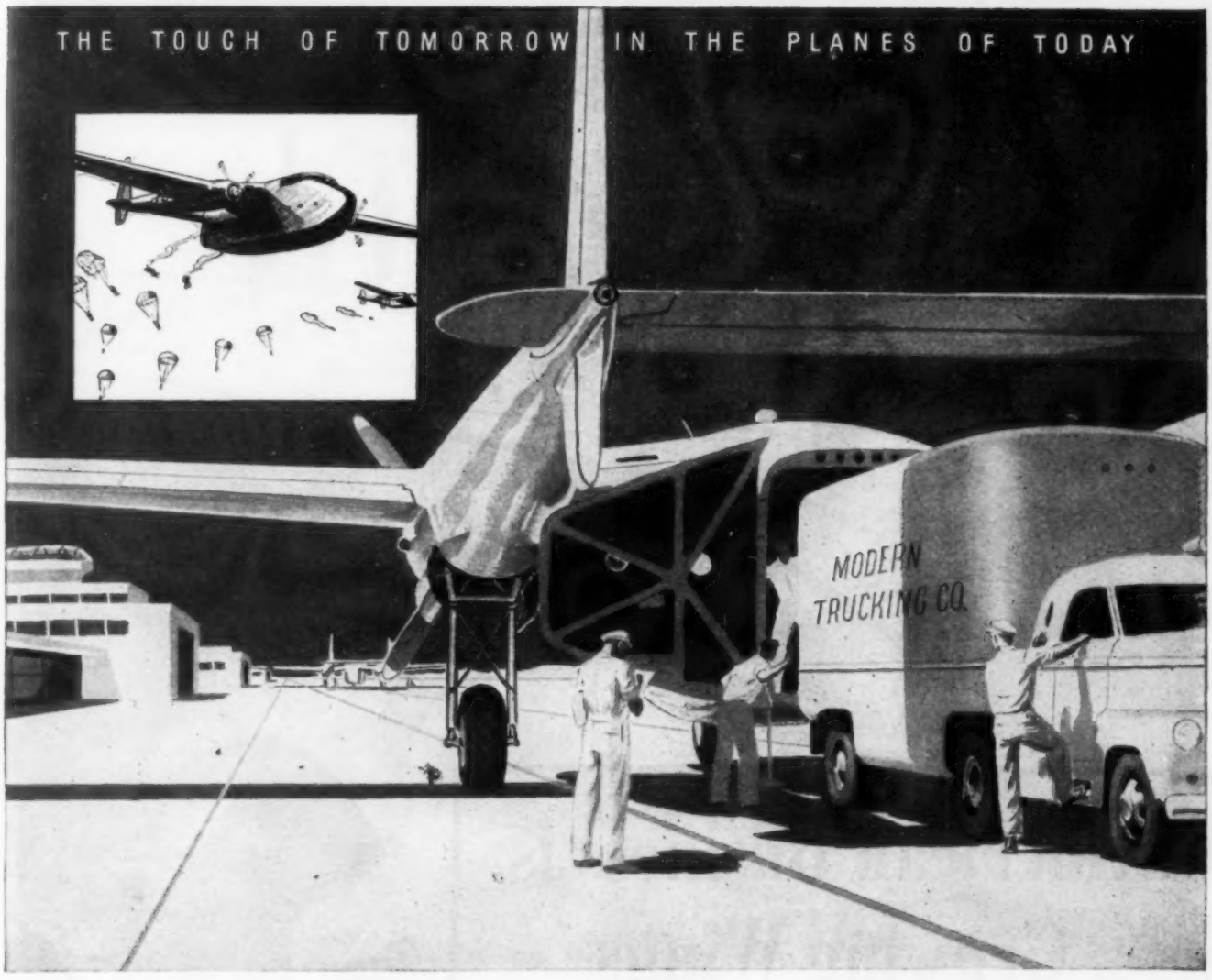
It is typical of numerous Continental applications now translating war experience into reliable low-cost power for the nation's peacetime needs.

Every Continental Red Seal Engine
Develops Its Full Rated Horsepower

Continental Motors Corporation
Aircraft Engine Division
MUSKEGON, MICHIGAN



POWER BY
Red Seal
Engines
CONTINENTAL



A Ship of War—With a Peacetime Destiny

You won't have to beat this weapon of war into a peacetime plowshare. V-J Day will see the Fairchild-designed "Packet" ready to plow the airlanes of commerce.

Built specifically for military cargo—tons of guns, men and equipment for battle—the "Packet's" huge hold will receive the bulky goods of peacetime commerce with ease, speed them hundreds or thousands of miles to their destinations.

Designated by the Army as the C-82, the "Packet" has been nicknamed the "flying boxcar." Its cargo compartment (2,870 cubic feet of unobstructed and continuous space) carries 93% of the capacity of a railroad boxcar.

Facility in loading is a triumph of Fairchild design. Split doors at the rear of the fuselage open to the full width of the cargo space. Cargoes roll smoothly into the "Packet" from a truck, for the "Packet's" horizontal floor is at standard truck floor height. Smaller pieces can be loaded through a forward loading door.

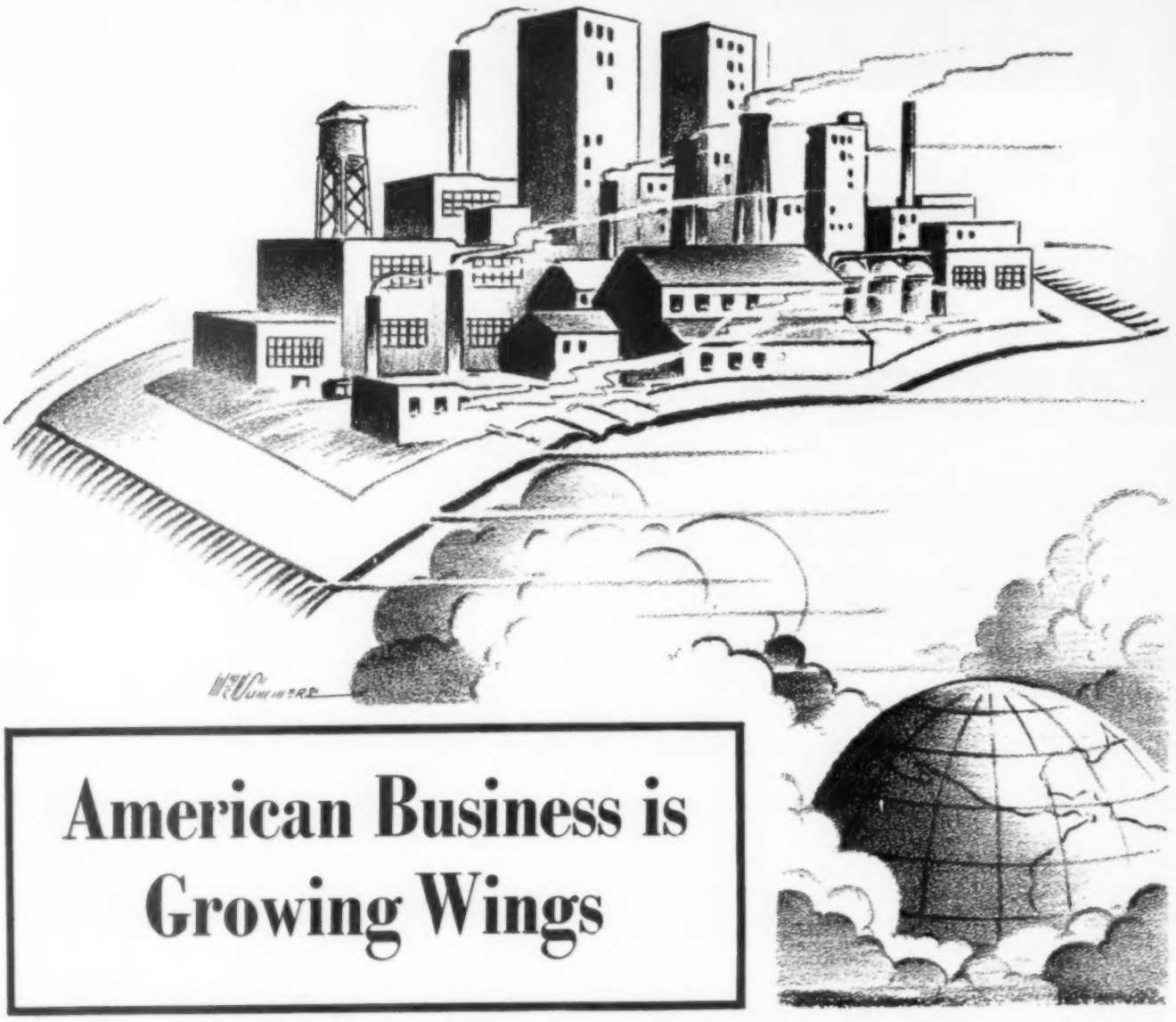
The value of the "Packet," to shippers of all types of "flyable" cargo, will be as broad as the future of air cargo itself. Time and experience will attest to its economy and multiplicity of uses. Thus, the "Packet," now at war, emphasizes the Fairchild tradition of advanced aviation, "the touch of tomorrow in the planes of today."

BUY U. S. WAR BONDS AND STAMPS

Fairchild Aircraft

Division of Fairchild Engine & Airplane Corporation, Hagerstown, Maryland

This is the third in a series of advertisements concerning the future of Aviation . . . in America



American Business is Growing Wings

MAKING America strong in the air, and thereby assuring National Security, is a program which will have the wholehearted cooperation of American Business as well as the support of John Q. Citizen, Government, and the Aircraft Industry. And American Business, giving this support, will of course gain many benefits from the conversion of our increasing aviation skills and capacities to the ways of peace.

Just as aviation has helped to solve the problems of logistics in wartime, so will aviation provide industry and business with new tools for shrinking the distance between markets, for opening new channels of distribution, and for achieving quick and ready access to any part of the world in a matter of hours.

As industry takes advantage of the facilities offered by aviation in the days ahead, it will thereby contribute to the further development of aeronautical science in America—for example, by using such new aircraft as the helicopter on many assignments for which this craft is especially adaptable and useful.

For these and many other reasons, American Business will do its part to make our Nation a great peacetime air power, working for Security and Permanent Peace.

At Bell Aircraft, we shall continue to utilize the ingenuity and research that helped to develop many of our victorious aerial weapons to establish aviation and air power as a partner in progress to Business and to all mankind.

★ *Buy War Bonds and Speed Victory* ★

MEMBER AIRCRAFT WAR PRODUCTION COUNCIL...EAST COAST, INC.

BELL *Aircraft*

PACEMAKER OF AVIATION PROGRESS

NIAGARA FRONTIER DIVISION
Buffalo 5, N. Y.
Airacobra (P-39) and Kingcobra (P-63)—Fighters
Airacomet—America's First Jet Propelled Plane
The Bell Helicopter

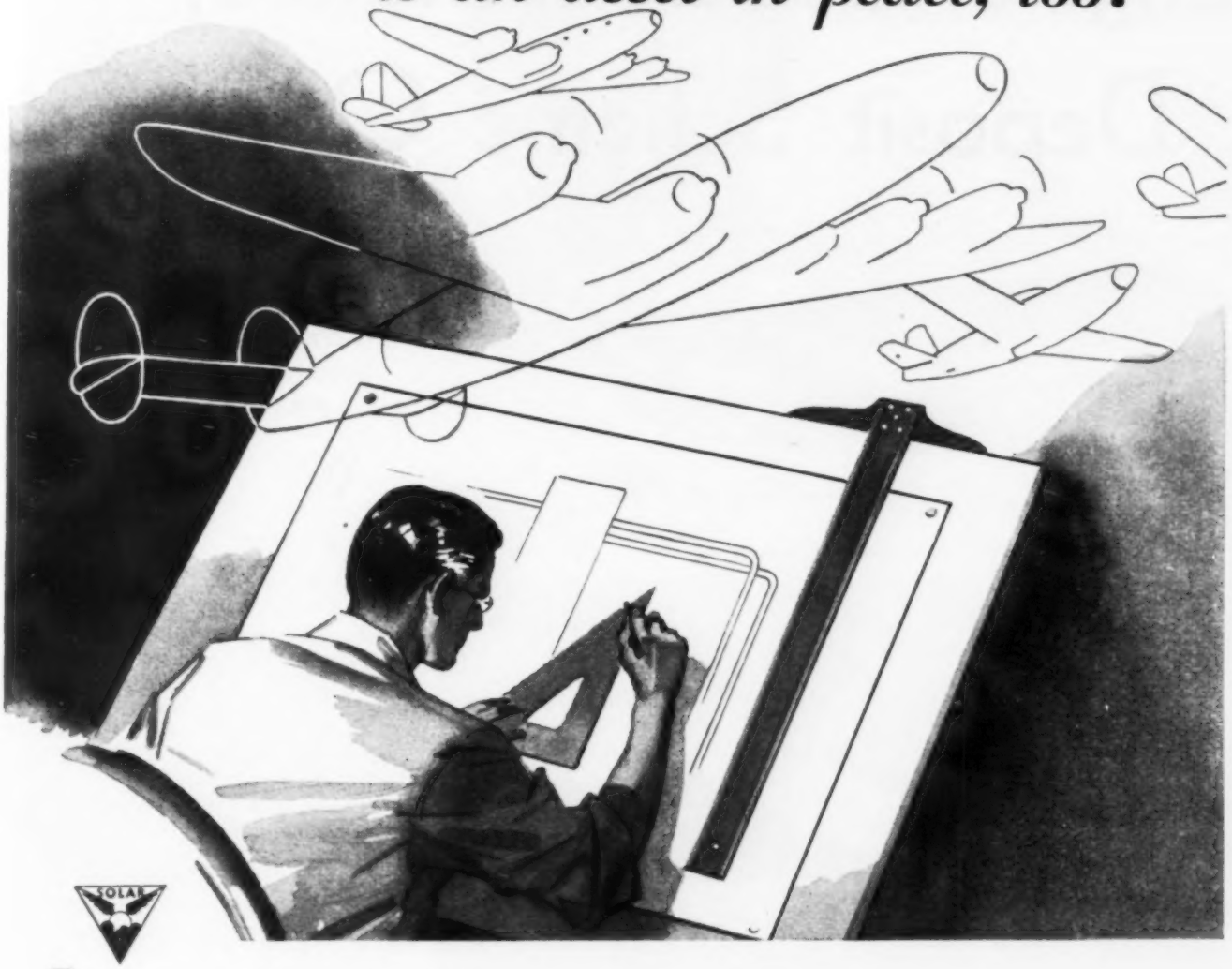
ORDNANCE DIVISION
Burlington, Vt.
Flexible Gun Mounts and other military materials

GEORGIA DIVISION
Marietta, Ga.
Bell Built B-29 Superfortress

© Bell Aircraft Corporation

"know how"

is an asset in peace, too!



IN PEACE as in war, "know how" is a priceless asset of American industry. And over the past fifteen years, in peace as in war, Solar has developed an invaluable "know how" in fabricating high temperature alloy products for the disposition and utilization of hot gases.

Airplane exhaust systems, heat exchangers, jet propulsion and gas turbine engine parts are the principal products upon which Solar has established and maintained its industry leadership. The design, engineering and manufacturing skills which have won this recognition will continue to help this country remain the foremost military and commercial air power. They are also now available to manufacturers in other industries whose problems are the production of heat and corrosion resistant products.

ARMY ★ ★ ★ NAVY E

SOLAR

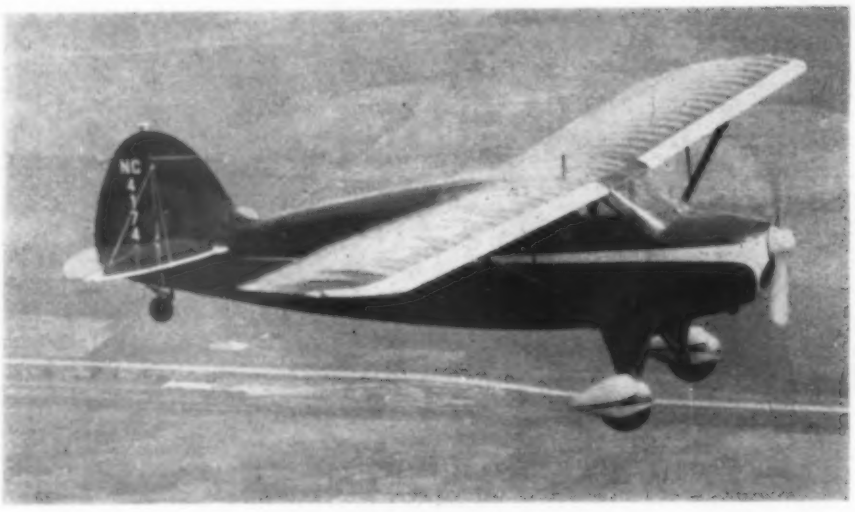
HIGH TEMPERATURE ALLOY PRODUCTS

SOLAR AIRCRAFT COMPANY SAN DIEGO 12, CALIF. DES MOINES 5, IA.

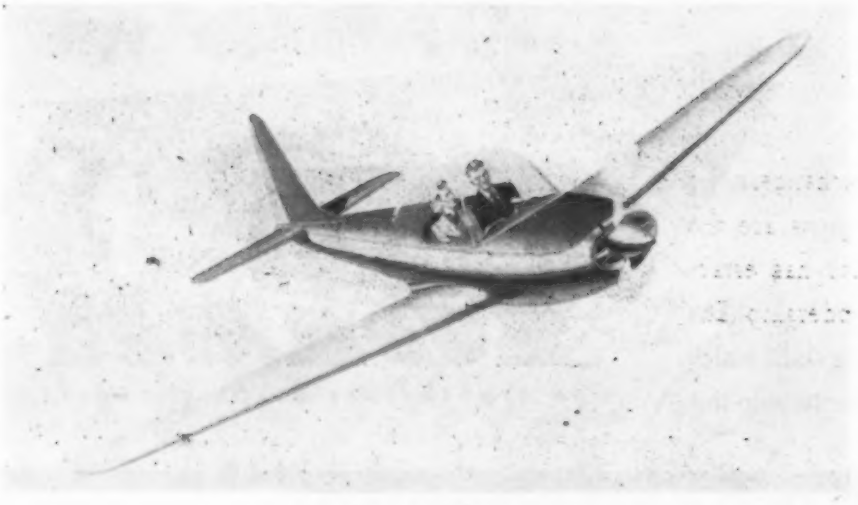
Private Flying Roundup:

Engine Orders Awaited; Deposit Scheme Opposed

Commonwealth Skyranger



Funk B-75-L



All American Ensign

Survey shows power plant producers ready for expanded demand with new and improved engines, but production peak not expected for months.

WITH the lightplane industry's assembly lines delayed because of reconversion and other problems, production plans of the engine manufacturers do not call for accelerated output until after January 1, and some of the power plant factories won't reach quantity rates until next spring. Meanwhile, the engine producers are rounding out projects which will introduce new models and major improvements on familiar ones which developed lightplane dependability standards before the war.

Latest information obtained from the engine industry indicates prices for power will be about the same as in 1941, or slightly higher, due to increased labor costs and other economic factors. However, some exceptions will probably be found when large-scale orders from airframe manufacturers justify mass production economies. No records have been broken yet, as far as can be learned, for engine orders—"we receive a lot of conversation but the orders are slower," one engine man pointed out.

Here are the latest facts available from engine manufacturers regarding reconversion, production plans and other data:

Franklin Outlook

Production of commercial aircraft engines by Aircooled Motors Corpora-

NEW LIGHTPLANES include these two-seaters. Commonwealth Skyranger, in $2,500 range, has 85-hp. engine, 105-mph. cruising speed, wing slots and trim tabs, starter, battery and generator. Funk Aircraft Company's B-75-L, flying for some time, is 75-hp. model with 102-mph. cruising speed, 800 ft. per min. climb, dual wheel control. All American Aircraft's low-wing Ensign is $3,000 all-metal, 85-hp. design with tricycle landing gear and bubble canopy.

tion has been resumed on a limited scale, and no definite production schedule has been established. However, full output is expected during February, 1946, and the company has the capacity to produce at least twice as many Franklins as were turned out in 1941. Present conditions indicate Franklin prices may be somewhat lower than in 1941, probably amounting to about $5 per horsepower for engines completely equipped with starter and generator. Aircooled Motors contemplates offering engines in a power range of 65 to 225 hp., with four-cylinder models delivering up to 100 hp. and engines of over 100 hp. being six-cylinder types.

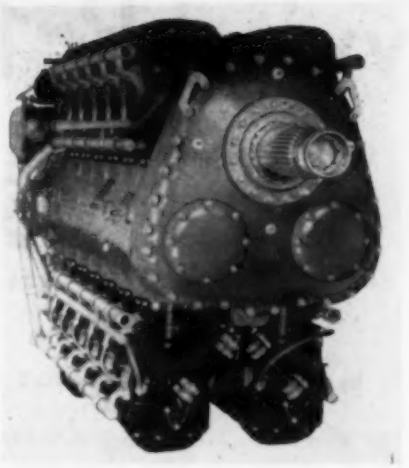
Ranger Rebuilding Surplus Engines

Ranger of Fairchild Engine and Airplane Corporation is not yet in substantial production of Ranger 6's and 12's, being engaged chiefly in rebuilding engines declared surplus. A major part of Ranger's work in the further design of the in-line, aircooled engine principle revolves around the continuing experimental development of higher horsepower power plants. Various Ranger developments are being used in several new airplanes not yet publicly announced.

Jacobs Has Liquid-Cooled "4"

Highlighting work at Jacobs Aircraft Engine Company is a newly-developed four-cylinder flat engine in the 100-hp. category. It is a liquid-cooled engine considered as offering several advantages. Meanwhile, Jacobs has finished revamping its L-4 (or R-755-9 by Army designation) and has received an ATC rating of 300 hp. at 2,200 rpm. for it at exactly the same size and weight. The old 330 Jacobs is likewise being revamped and is expected to be approved for 375 to to 400 hp., without increase in size or weight. These three engines are the only ones Jacobs contemplates having in production by the end of 1946, but others are being developed. Full production is scheduled to be attained by March or April, with a minimum rate of 100 engines per month in the standard line—twice as many as were produced before the war. No estimate is available on production of the newer models. Cost factors are still unstable. Jacobs has a "sizeable" quantity of tentative engine orders. Obtaining materials and freeing machines for production are about the only problems at present, and are not considered serious.

Menasco Manufacturing Company is in the process of developing its commercial aircraft engine program. Although details are unavailable, Menasco is expected to come out with important projects in the near future.



24-CYLINDER LYCOMING developed for high horsepower market is liquid-cooled "H" design rated at 2,000 hp. at 3,100 rpm., and 2,300 hp. for take-off at 3,300 rpm. Dry weight is 2,400 lbs., and dimensions are 30.54-in. width, 50.16-in. height and 89.9-in. length. Other facts: Displacement, 2,468 cu. in.; bore, 5.25-in.; stroke, 4.75 in., and compression ratio, 6.4:1.

Warner Expands

A new 185-hp. model rated at 200 hp. for take-off and the improved 165-hp. model rated at 175 hp. for take-off is being offered by Warner Aircraft Corporation, which expects to reach full production in June, 1946, when the airframe manufacturers reach quantity output. L. A. Faunce, vice president and sales manager, estimates Warner production during the coming year will be approximately one and one-half times that of 1941. The company has a few engines available now and has delivered a considerable quantity as replacement engines for airplanes badly in need of new power plants, although production has been delayed pending cleaning up of wartime contracts. Prices will probably remain about the same as of 1941 in regard to dollars per horsepower, according to the company, although changing economic conditions will be a factor.

Taylorcraft Proposal Backfires

MEANWHILE, delays in airframe manufacturing due to reconversion and materials difficulties have stalemated activities of many distributors and dealers chomping at the bit for opportunity to meet the pent-up demand for lightplanes. The stalemate was highlighted recently by difficulty between a manufacturer and its distributor organization when an effort to effect a deposit plan based on quotas backfired. Opposition was quick to develop against the proposal, advanced by Taylorcraft Aviation Division of Detroit Air-Craft Products, Inc. Taylorcraft planned accepting orders on a seven-month schedule, with dealers assigned a quota of one airplane per month for every 100,000 population in the territory. A deposit plan, described as being intended to facilitate "equal distribution of airplanes," proposed dealer deposits ranging from $900 per airplane for October delivery to $300 per airplane for April, 1946, delivery. Total deposit required on one plane per month for a seven-month period amounted to $3,000, with deposit money being applied against purchase price. Following several distributor-dealer protest meetings, culminating with a meeting at the factory in Alliance, Ohio, Taylorcraft executives withdrew the quota and deposit plan. Subsequently, the company cancelled out some distributorships, announced a plan to replace them with factory representatives and offered displaced distributors dealership contracts in the same territories. Observers see in the Taylorcraft incident a trend indicating possible elimination of the distributor as a middle man in aircraft sales and distribution.

Surplus Discount Shade Late

Surplus aircraft offered some relief to distributors and dealers engaged in converting them. But surplus "buys" for operators had long since become scarce, and most of the popular types remaining in the pool were little more than clunkers. With that stage having been reached the Reconstruction Finance Corporation finally agreed to give dealers and operators a discount for purchases of three planes at a time. The price reduction amounts to 20 per cent for primary and basic trainers, and 15 per cent for UC-78's. Ex-servicemen may obtain the same discounts with the purchase of only one airplane from RFC.

Surplus aircraft declarations, sales and prices as of September 1 were as follows:

Liaison: 3,416 declared surplus, 3,100 sold for $2,590,461.17, or at average price of $836.60 each. Primary trainers: 9,152 declared surplus, 4,062 sold for $4,344,766.28, or at average price of $1,045 each. Utility cargo: 300 declared surplus, 178 sold for $1,026,278 or at average price of $5,765 each. Cessna UC-78: 665 sold as of September 23 for $5,574,050 or at average price of $8,382 each. Light transports: 2,684 declared surplus, 399 sold for $3,308,707.39 or at average price of $8,292 each. Medium transports, 432 declared surplus, 143 sold for $6,154,332 or at average price of $43,037 each. Basic trainers: 76 sold for $289,202 or at average price of $3,805 each. Lockheed Lodestars: 73 sold for $2,107,000 and 21 rented or leased for a total of $92,400 annually.

The Navy's FR-1 Fireball

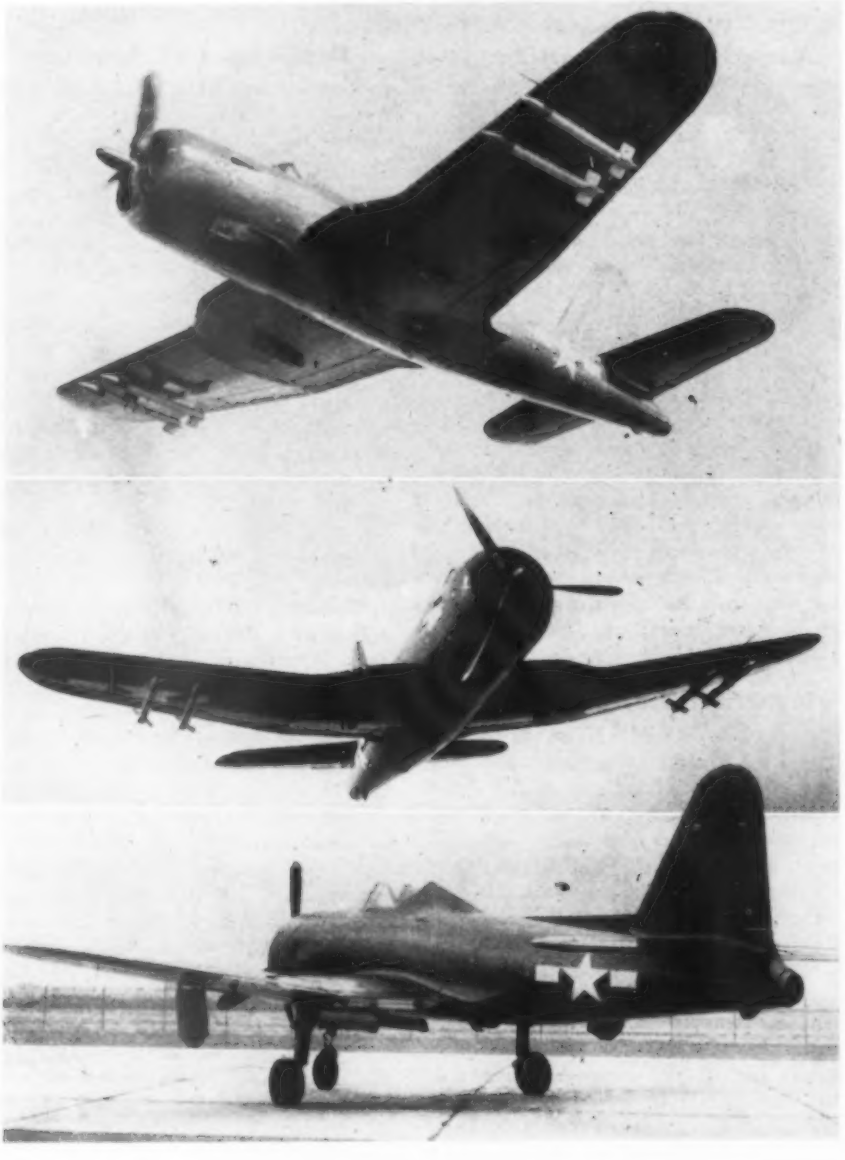
Unlimited possibilities have been tapped by Ryan's new fighter mounting Wright engine in front and gas turbine behind pilot.

By GEORGE E. HADDAWAY

THE Navy's new FR-1 Fireball fighter, first U. S. airplane combining reciprocating and jet engines, has set observers to pondering almost unlimited possibilities for the unique combination. A conventional-appearing airplane, the low-wing single-seater with tricycle landing gear appears at first glance to be a single-engine fighter because of the conventional radial engine mounted in the nose. But tucked away inside the fuselage behind the pilot is a General Electric-designed I-16 thermal jet engine.

Complete details, including maximum speed with both engines at full throttle, were not disclosed when the Navy demonstrated the new fighter at Washington last month. But the 1,350-hp. Wright Cyclone alone gives the Fireball a speed of more than 320-mph., and the jet engine alone gives it a speed of about 300 mph. with the nose engine's propeller feathered. The only twin-engine performance figure released is its rate of climb—said by the Navy to be "a mile-a-minute."

Built by Ryan Aeronautical Company at San Diego, Calif., the Fireball never reached combat although the Navy's VF-66 fighter squadron had been equipped with it and had commenced pre-combat training prior to V-J Day. First new combat model to be unveiled since victory, the Ryan has made history in several impressive ways. It is the Navy's first jet airplane, has the shortest turning radius at comparable speeds of any modern fighter, and has already demonstrated possibilities for bringing about entirely new combat tactics.



Three views of Fireball reveal unusual features. Top photo emphasizes wing design, with flat air scoops in wing's leading edge near fuselage (note wing contour at fuselage joint). In center photo FR-1 is climbing with propeller feathered and jet engine delivering thrust. Plane's tricycle landing gear and jet exhaust tube are shown at bottom. Wheels retract outward; FR-1 is shipboard fighter and has folding wings.

—(Ryan Photos.)

Many Advantages

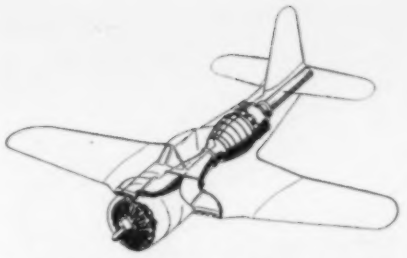
Ryan's new design introduces an entirely new category of high-performance aircraft. No compromise, its pioneering significance can best be understood in the light of various advantages gained through combining the reciprocating and jet engines, mounted tandem. The unique combination makes the airplane equally efficient at both high and low levels, and its speed curve varies very little from sea level to 25,000 feet. Thus the FR-1 pilot would not have to hunt a favorable altitude in which to tackle an enemy. If one of its power plants is knocked out, it can continue to fly without the pilot having to counteract the "swing" which follows the loss of power from one engine in a twin-engine airplane. In an actual emergency, Chief Test Pilot and Flight Research Engineer Al Connover of Ryan proved the Fireball's safety advantage recently when the nose engine failed on take-off. He continued, without pause, on the jet engine.

There are other advantages. Jet engine efficiency increases with speed, but once speed has been reduced, planes powered with jet alone lack full combat effectiveness. But the Fireball's conventional nose engine prevents loss of speed upon which the jet depends for its best performance. In the Ryan the pilot retains combat initiative at all times. Because the plane develops its maximum rate of climb at high air speeds, the Fireball pilot can outdistance all conventional type fighters, which climb best at considerably lower

air speeds. Since the jet accelerates rapidly in a nose-down position, the pilot also has a tremendous advantage in evasive shallow and steep dives. Acrobatics "with speed to spare" are performed with only the slightest control pressures, say Navy pilots who have flown the Ryan.

Four 50-calibre machine guns, which can be serviced with the wings folded, provide the fighter's firepower. This is supplemented by rockets carried on detachable mounts beneath outer wing panels. In addition, two 1,000-pound bombs may be carried under the wings.

The FR-1's cockpit is located slightly ahead of the wing's leading edge, giving the pilot effective vision, especially when landing the tricycle aboard a carrier. The cockpit is not pressurized. Subdued red lighting is used to illuminate the instrument panel. The all-metal fighter's exterior surfaces are flush riveted for cleanness and the wing is of laminar flow design. The nose wheel retracts rearward into the fuselage while the main wheels retract outward into the wing. Both engines



Drawing shows installation of General Electric-designed thermal jet engine behind FR-1 pilot. Both power plants burn high octane gasoline.

are completely enclosed and all air scoops for the forward engine are within the engine cowling. Air scoops for the jet engine are located in the wing, near the fuselage on both sides. The nose engine is equipped with a fast-feathering Curtiss Electric, three-bladed constant speed propeller.

Watching the new Ryan perform at Washington during its first public showing, our personal impression was much different from that which came to mind when we first saw the Army's radically-designed, propeller-less jet-propelled P-80 fighter. The FR-1 is much more conventional in appearance, and seems to offer more immediate possibilities and more versatility. Seeing the Fireball go through its paces reminds you more than ever of the Navy's great accomplishments in seeking, obtaining and maintaining flying equipment of highest possible quality. It has been a difficult achievement, considering the necessity of developing carrier-based planes, with all their folding wing, arresting gear and slow take-off and landing requirements, which must outperform not only the enemy's carrier equipment but his land-based fighters, too. The aircraft industry's share in that accomplishment has been great. Ceaseless pioneering research and development has given the Naval air force superiority. Although it never reached combat, knowledge gained from Ryan's FR-1 and its manufacture has already been translated into an improved Fireball design as well as utilized in development of still newer combat planes yet to be announced.

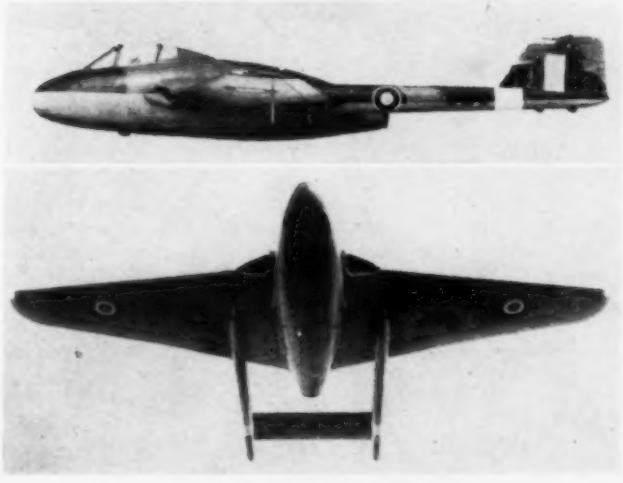
ENGLAND'S NEWEST COMBAT CONTENDERS

DETAILS of two new de Havilland single-seater fighters have been released along with British claims that they are the world's fastest airplanes in their class—the jet-propelled Vampire, for which a speed "exceeding 500 mph. is claimed," and the Rolls-Royce-powered Hornet, said to have a top speed of more than 470 mph.

Third and latest of Britain's jet aircraft to come off the secret list, the mid-wing, twin-boomed Vampire is powered by a Goblin gas turbine designed and manufactured by de Havilland. Its cabin is pressurized and its operational ceiling exceeds nine miles. Of all-metal construction, except for the wooden cockpit, it has a forty-foot wingspan, length of thirty feet six inches, height of nine feet nine inches, and mounts four 20-mm. cannon in the nose.

The Hornet is powered by two Rolls-Royce Merlins rated at 2,070 hp. each. Closely resembling the Mosquito but having a still smaller wing, it was designed for shipboard use and long range combat against single-engine fighters. It mounts four 20-mm. cannon in the nose, climbs better than 4,500 feet per minute, has a 2,500-mile range with extra tanks, grosses 15,000 pounds normally, and has a forty-five-foot wingspan and thirty-four-foot six-inch length. Fuselage is of wood, but wing is a composite with a double plywood upper skin and an under skin of light alloy metal with composite wood and metal spars.

The Vampire's airframe and Goblin engine were designed concurrently by the de Havilland Aircraft Company and the de Havilland Engine Company, with Sir Geoffrey de Havilland in charge of the airframe and Major Frank B. Halford directing the engine work. Sir Geoffrey himself was test pilot when the Vampire prototype was first flown on September 20, 1943. Both aircraft and engine have been in production for several months, with the plane being built by the English Electric Company at Preston, Lancashire, and the engine being produced in London.



de Havilland Vampire

de Havilland Hornet

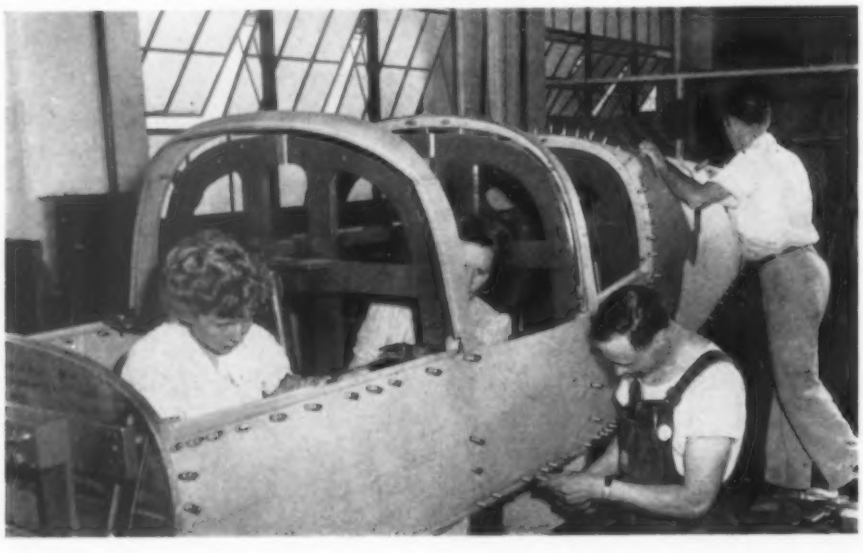
First flight photo of all-metal Swift shows wide span of retractable landing gear and single-piece grill opening of nose cowl, which takes in air from below the propeller hub for improved cooling. Basic airframe will be marketed in 85-hp. and 125-hp. versions.

Globe's All-Metal Swift

WITH a large stock of parts and sub-assemblies built up, Globe Aircraft Corporation at Fort Worth is expediting assembly line production of its all-metal, two-place Swift, 4,000 units of which the firm plans to manufacture by the end of 1946. A visit to the factory in late September found eleven Swifts on the line. They were scheduled to be completed by November 15, when the line will contain twenty units. One hundred Swifts by January 1 are the immediate goal.

One of the major factors behind Globe's effort is the recent addition of a number of production engineers who were key men in the manufacture of AT-6 trainers and P-51 fighters at North American Aviation's Dallas factory, which was closed on V-J Day. The pioneer Swift, of metal-fabric-wood construction, had already been converted to all-metal construction to facilitate production and Globe officials were quick to act when North American personnel became available. As a result the Fort Worth factory is off to an impressive start.

Production of the Swift requires approximately 3,600 tools and fixtures. A large variety of special tooling has been or is in the process of being installed to attain a high rate of output. The company has invested heavily in precision jigs embodying the latest features of assembly line manufacture.



A few of Globe's 1,000 employes are shown here riveting the Swift's aluminum skin on a special jig. Special tooling has been designed to expedite production.

85-hp. and 125-hp. Versions

The all-metal Swift incorporates several improvements over the prototype, and will be marketed with 85-hp. and 125-hp. Continental engines. Both the four-cylinder and six-cylinder engines will be available with either carburetion or fuel injection. Starter, generator and two fuel pumps are standard equipment. The engine mount of welded steel tubing is attached to the fuselage at four points. The cowling is made in two parts, the top half being removable by loosening two Dzus fasteners and lifting the handles on the front of the cowl. The lower cowl is attached to the fuselage by four bolts which can be easily removed.

The semi-monocoque metal fuselage is manufactured in forward and rear sections. The empennage is of monospar structure with Frise type elevators.

The Swift wing, twenty-nine feet four inches in span, is of semi-monocoque all-metal construction and consists of center section, joined to the fuselage through main and rear spar attachments, outer panels, and removable wing tips. Slots, ailerons and flaps are easily detached. Gas tanks of fifteen gallons each are fitted in center section rib apertures, and feed fuel into a common trap located on the airplane's centerline. Outer wing panels are attached to the center section by two bolts at the main spar and one at the rear spar. A production feature in the wing is the use of beaded

skin on outer panels for additional stiffness without increasing the weight.

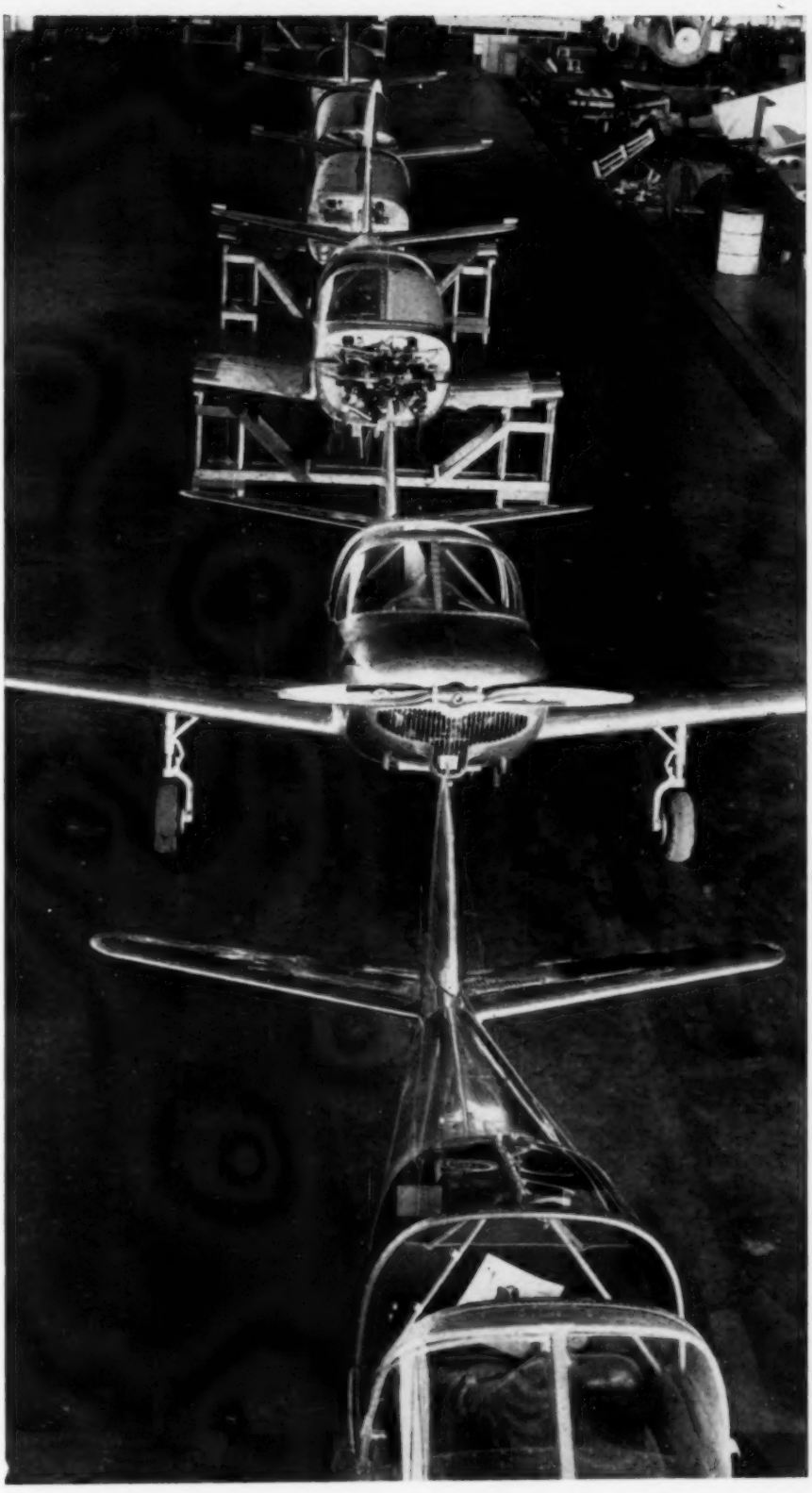
All-metal flaps and ailerons are used. The flaps form the trailing edge section of the center wing section and extend to the inboard section of the ailerons. Control surfaces are hinged to component parts by ball bearings for ease of operation. The control system is of the wheel and suspended pedal type. Elevators are controlled through cables attached to the wheel control and to a quadrant in the aft part of the fuselage, where push-pull tubes connect to the elevator horns. A sprocket-driven chain from the wheel control column is connected to cables extending to the aileron ball crank assembly, with supporting pulleys. Rudder pedals are connected by cable to a quadrant below the cockpit floor, from which cables extend through the fuselage along supporting pulleys to the rudder control horn.

The Swift's retracting landing gear is actuated by a hydraulic system, which also actuates the flaps. All operations are positive with down and up locks, and the flaps may be stopped at any intermediate position. A wheel-shaped control on the instrument panel is used for landing gear and a nearby handle controls the flaps. An emergency landing gear control handle, located between the seats, operates the landing gear by mechanical linkage.

Main gear landing shock is absorbed through oleo spring struts having a three-and-one-half inch over travel. An arrangement of shear web-type nose ribs, with auxiliary shear beams between two ribs, in the landing gear attachment area prevent the concentration of excess landing shock on the main spar. The main landing gear wheels have a tread of nine feet nine inches, and retract into the center wing section outside of the cabin. A hydraulic spring strut cushions action of the tail wheel, which is steerable through ninety degrees, beyond which it is free swiveling.

A twelve-volt electrical system in the Swift includes a spill-proof battery, engine-driven generator and navigation lights on wingtips and on top of the rudder.

The Swift's two-place cabin has a sliding hatch enclosure, with panels sliding down into the fuselage walls. They are readily opened at any speed or attitude in flight. Top panels are tinted for protection against the sun's rays. An attractive plastic instrument panel is mounted over the stamped metal blank. The standard panel, located in the center, is removable as one unit. Apertures in the metal blank are provided for easy installation of additional instruments.



From this start Globe will expand its final assembly line to accommodate twenty Swifts. Two have been completed, eleven are scheduled for completion by November 15, and 100 are expected to be finished by January 1.

Forty-two inches wide, the cabin incorporates numerous comfort and design features. A stepping block is located between the seats. The seats and the one-piece back are cushioned by foam rubber material, and are upholstered in leather. The color scheme is blue trimmed in cream, and all exposed metal is finished with "flox." An ash tray and map pocket are provided on each side of the fuselage, near the instrument panel. ★ ★ ★

Sikorsky R-6A is latest helicopter trainer used by AAF Training Command at Sheppard Field, Texas. Opening in fuselage of this hovering R-6 contains new 245-hp. Franklin engine, designed especially for helicopters and installed upended.
—(Photo by E. H. Pickering.)

HELICOPTER TRAINING

. . . Proving Ground for Progress

Revealed for the first time since operations began, here are facts and figures gained from intensive Army helicopter pilot training.

By TOM ASHLEY

HELICOPTER progress has advanced further than is generally conceded, and rotary-wing aircraft complexities have been impressively lessened. That's the impression after watching them operate at the Army Air Forces helicopter training center, where we talked with the instructors, studied the records and rode with an instructor who demonstrated the Sikorsky R-6A's capabilities and limitations and allowed us to handle the controls.

Rigorous training schedules at Sheppard Field, Texas, where the AAF Training Command concentrated all of its helicopter flying instruction before V-J Day, proved a number of points which formerly were the basis of misconception and misunderstanding. Outstanding among these is that helicopter flight training has been one of the safest of all AAFTC programs—no fatal accidents or serious injuries have been suffered by Army instructors or trainees. And the training records prove helicopters can be safely landed in case of engine failure — an automatic clutch makes possible autorotation, or "free wheeling."

Helicopter pilots don't have to be supermen. All Army pilot students have soloed after an average of only six or seven hours of flight instruction. Of 176 volunteers who had undergone AAFTC helicopter training as of V-J Day, only twelve were eliminated or failed to solo within eight hours. Army trainees were pilots before taking rotary-wing instruction, but AAFTC experts believe a novice without prior flight experience of any kind can be soloed within ten hours. The Army

Original AAF helicopter trainers were these Sikorsky R-4's with nose skids.
—(Army Air Forces Photo.)

course lasts seven weeks and gives twenty-seven hours of flying training and seventy hours of ground school. There are five phases of flying training — pre-solo, five hours; intermediate, eight hours; advanced, seven hours; precision, five hours, and night flying, two hours.

Mere appearance points up helicopter progress in design and manufacture as the Sheppard Field visitor compares old and new Sikorsky models, the only type used in AAFTC training. The pioneer R-4, for example, looks like a Rube Goldberg contraption beside the newer and highly-streamlined R-6A. The latter's smaller, more compact rotor head is simpler, more refined and much lighter. Its 245-hp. Franklin engine has eliminated complicated and weighty clutch and gear mechanism which linked the R-4's 180-hp. Warner with the rotor head.

The R-4 weighs 1,952 pounds empty and 2,503 pounds normal gross, but the R-6 weighs only 1,775 pounds empty and 2,376 pounds normal gross. Whereas the R-4 cruises at about sixty mph. and has a top speed of about eighty-five mph. (actual), the newer R-6 cruises at about eighty and has a top speed of about ninety-five mph. (actual). Vertical rate of climb in the R-4 is only 750 fpm. but is 1,200 fpm. in the R-6 (sea level).

The most striking contrast is shown in a comparison of performance under overload conditions. Here are the Army's figures:

	R-4	R-6
Overload gross weight	2,800	3,300
Empty weight	1,952	1,775
Overload useful load	848	1,525
Maximum range	200	800

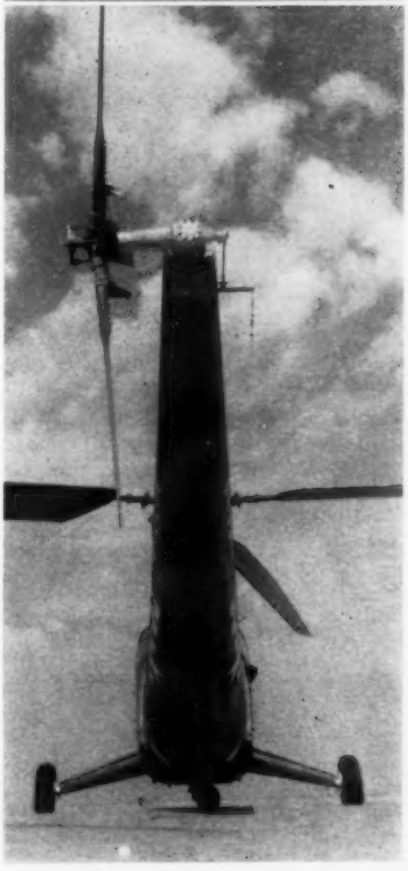
(Note: Helicopters won't take off vertically when overloaded but are "jumped" off.)

Sikorsky's larger and newer R-5A is powered by a 450-hp. Pratt & Whitney Wasp Jr. engine, has a normal gross weight of 4,445 pounds and a normal useful load of 1,225 pounds, cruises at eighty mph. and has a top speed of about 106 mph. (actual). Because of critical weight factors. Helicopter students and instructors are exempt, while flying below 750 feet, from the Army's parachute regulation, rigidly enforced in all other training programs.

Maintenance Still Heavy

Helicopter maintenance, a major problem which must be solved before the "egg-beaters" ever become practical for commercial and private flying, has been sharply reduced. Extremely high stresses, the large number and variety of moving parts, grit and dust created by the rotors near the ground, and lack of time for engineering perfection have combined to plague the helicopter with heavy maintenance. But where three and one-half mechanics per helicopter were formerly required at Sheppard Field's training center, only two mechanics

(Continued on page 80)



Looking down through R-6 nose while descending for landing with nose level.

Interesting views of R-6A helicopter trainer show the craft descending vertically (top), a study from the rear emphasizing the tail's rotor for counteracting torque (right, center), forward visibility from the seat while settling to the ground (right, lower), and the Sikorsky's highly-streamlined plexiglass nose (below). Main rotor blades are thirty-eight feet long. Overall length is forty-seven feet, eleven inches, overall height ten feet six inches, and normal gross weight is 2,376 pounds.
—(Photos by E. H. Pickering.)

Return to Private Flying
as Liaison Pilots Plan It

A correspondent interviews Army lightplane crews overseas and learns what they want in postwar performance and design.

By STAFF SGT. EDDIE COPE

THE men who fly and repair the lightplanes in the Mediterranean Theater of Operations have some pretty definite ideas on the kind of air flivvers they'd like to own and fly after the war—if, and that's a mighty big word, if excessive costs don't keep 'em *from* flying.

During a period of ten days I flew about 1,500 airline miles in Italy, visiting all types of AAF bases connected with lightplanes, shooting the breeze with liaison pilots, mechanics, glider pilots (who have been flying the light ones since the invasion of Southern France in August, 1944) and operations officers.

Everyone, it seems, has different ideas about his ideal planes of the immediate future. "Ideal" engines, for instance, range from 75 to 185 horsepower. Speed and comfort come in for a number of plugs. So do flaps and slots. Seating suggestions are for two, three and four-place jobs. Retractable landing gear, controllable props, two-way radios, and amphibians are all mentioned, but the one big universal point is the high cost of everything bearing on lightplane operation.

First Lieutenant Byron E. Sheppard has plans for a West Coast airport emphasizing good service for private fliers.

But let these lightplane war pilots speak for themselves:

Lt. Byron E. Sheppard, 27, Los Angeles, Calif., former North American Aviation employe, was a corporal in the Field Artillery, stationed in Rabat, French Morocco, when the call for personnel with civilian flying experience came from higher headquarters. Cpl. Sheppard, holder of a private license since 1936, stepped forward and was immediately earmarked for the F. A. Liaison Pilot Training School operated in 1943, at Sidi Bel Abbes, Algeria.

First Lieutenant R. W. Stevens will use four-place plane with ample instruments and insist on good radio.

Comfort Emphasized

Sheppard won his wings in time to participate in the final phases of the Tunisian campaign with the Third Infantry Division. He liaisoned from Sicily right on up to the Po Valley, and now that the war is over and he no longer has to dodge "black stuff" while flying behind enemy lines, Lt. Sheppard likes to think about the future of lightplanes as he makes routine hops.

Flight Officer Patrick L. Baxter expects aircraft repair work and maintenance to be less expensive.

When he puts on his civilain clothes again—somewhere on the West Coast—Shep plans to set up and manage a small airport with the accent on service. He'll have many accommodations, including a businessman's lounge where the flying executive can meet his customers, a restaurant, drive-'em-yourself cars, a super-service station for lightplanes, and possibly an agency among other things.

Lieutenant Sheppard's ideal postwar lightplane would include these factors:

1. Comfort.
2. 125 to 150 mph. cruising speed.
3. Maximum endurance of three hours.
4. Flaps and slots.
5. Seating for three or four persons.

Lt. Francis X. Hurley, a 26-year-old public accountant from Boston, says that lightplanes need more comfortable seating facilities. "Two or three hours' flying and your back is

(Continued on page 72)

THIS HIGHLY TRAINED NAVIGATOR has picked many a precision course through thousands of miles of naked Pacific sky. For more than 3 long years his tools have been the sun and the stars, maps and almanacs, charts and calculators, his aircraft instruments and his precious octant; *but all of them useless without his accurate skill.*

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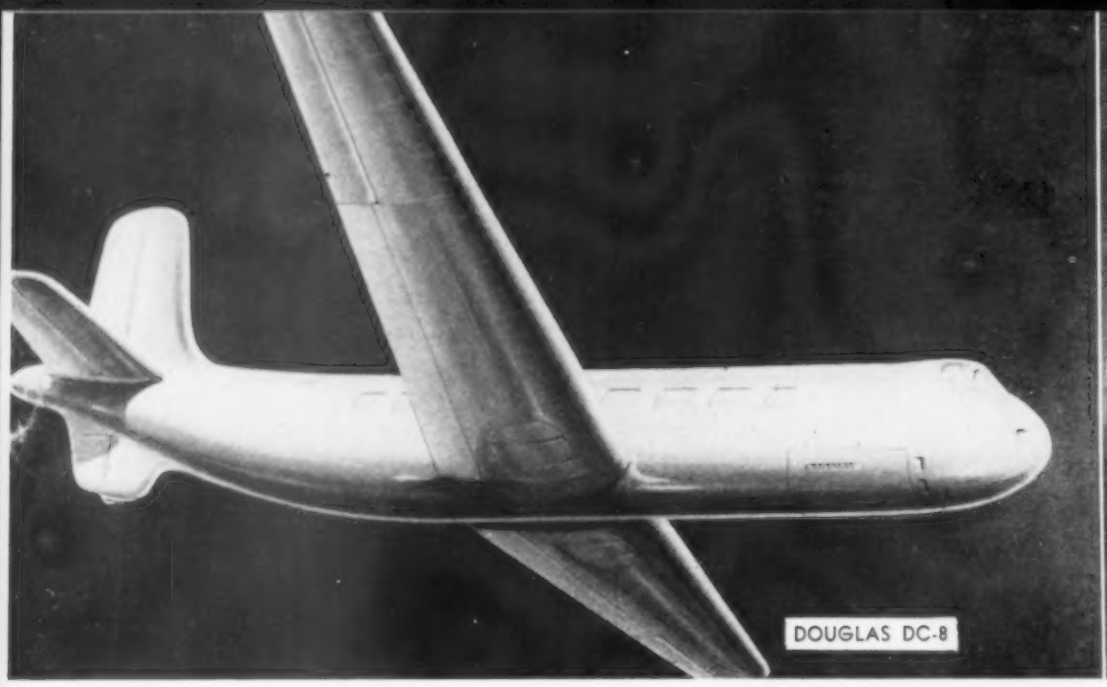


Here are drawings of Douglas' radical DC-8 tail-pusher, Martin's 270-mph. Model 202, and a high-wing, thirty-passenger Boeing. All are tricycle types. DC-8 is a development of the XB-42 medium bomber, has two Allison engines in nose driving counter-rotating propellers for centerline thrust and unobstructed wing advantages.

Design For Air Progress

High performing transports promise lower costs and greater volume for air commerce as the airlines inaugurate plans delayed by war.

By E. H. PICKERING

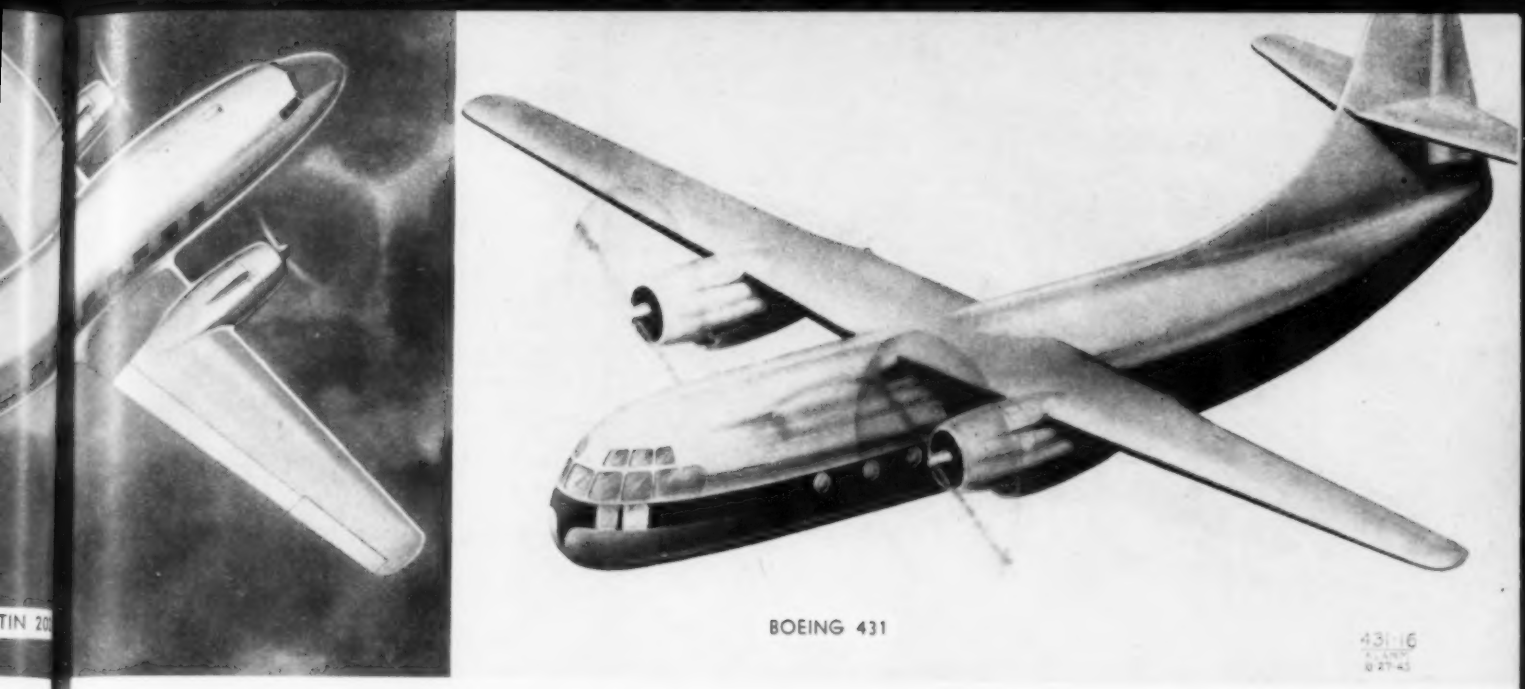
A NEW picture of air commerce is being developed in behind-the-scenes airline expansion and improvements, incorporating not only impressive changes in aircraft design and performance but reflecting significant changes in the basic concept of air commerce and its furtherance. The addition of new, larger and faster equipment is already well under way, with four-engine operations expected to supplement DC-3 schedules as early as December. Beginning in late spring or by next summer the first of new airliners introducing war-developed improvements will make their appearance, and by 1947 the transition will have progressed far towards abandonment of DC-3 operating standards.

Some of the impending improvements contrast so sharply with existing accepted standards they indicate radical changes. The familiar DC-3's cruising speed of 165 mph., for example, will be jumped almost immediately to well over 200 mph. by the DC-4, and Douglas' successor to the DC-3 will boost that to well past 250-mph. Improved efficiency will show parallel contrasts, as revealed in a study of eighteen different transports comprising the table published on the opposite page. Mirroring significant engineering achievements, these improvements involve extremely heavy airline investments, but each has been calculated by both the designers and the airlines to pay its way.

Such radical changes are the result of abnormal conditions, in which the airlines were prevented by pressure of war tasks from taking action sooner. Millions of engineering hours, for which there was neither prewar utility nor financing, have been adapted from war projects to commercial improvements. Improved operating efficiencies, gained from higher speeds, heavier loads and aerodynamic improvements, will result in lower operating costs, which will open the gates to air commerce for passengers, mail, express and freight never before available. Extension of routes, opening of new territories such as the feeders contemplate, and additional schedules will develop air commerce on a broader and firmer foundation.

The airlines are recognizing in the transition a new fact: Future traffic potentials can no longer be estimated on past records alone. New performance and services are expected to create business where none existed before. But such new business will have to be gained through competition, and in the effort the airlines will not only compete against one another but will meet enlightened and diligent competition from surface carriers. Alert airline executives are developing many innovations. Indications point to development of several classes of airline service, ranging from the super deluxe type down to the chair-car, or high density, classification. Persons who desire luxury will get it and pay for it. Those who are interested only in transportation will get that, too, without paying for the extras they don't require.

The size of commercial transports is being constantly increased. But close observers expect commercial transports to be restricted in size by economic factors before the engineers reach their limit. One prominent industry leader, who preferred to remain anonymous, pointed out to the writer that the economic limit now in view appears to be represented by the 81-passenger Boeing 377. Douglas 108-passenger DC-7, by that reasoning, is beyond the immediate economic limit



BOEING 431

of size and probably will not have commercial utility for some time to come, and commercial operation of Convair's Giant Model 37 is more problematical. While potential traffic volume is a major factor, the large transport imposes serious problems in the matter of heavy investment and insurance liability.

Increased dependability of air transport will be sought by new operating techniques including the use of radar to permit all-weather operations without affecting the airlines' high safety standards. Special types of radar will go far in accomplishing this, and both the carriers and the Civil Aeronautics Administration are developing this phase of the transition. Airport facilities will undergo significant changes. Modern transports with their tricycle landing gear, heavier loads and more powerful engines are expected to eliminate the necessity of upwind take-offs and landings. Cross-wind landings will eliminate the expense of "paving the compass," a major factor in airport costs, airline landing fees, and expansion of the nation's airport system.

Conversion of military C-54's into commercial DC-4's began recently when twenty were allocated to North Atlantic route operators. The first DC-4 to operate on domestic routes probably will appear on American Airlines' New York-Chicago route in December. American has arranged with Republic Aviation Corporation to convert fifty to seventy-five C-54's at a rate of ten a month, each being outfitted to carry sixty passengers. The standard production model DC-4 is of forty-four-passenger capacity. American has also ordered fifty Douglas DC-6's, which are expected to enter service in July, 1946. An idea of airline expansion now under way was given recently by C. R. Smith, chairman of the board of American, when he outlined new equipment plans and commented that American expects a 100 per cent increase in traffic volume during the next six months. DC-3's will be continued in operation until the saturation point is reached, but

Comparative Study of New Commercial Transports

MODEL	Gross Weight	Useful Wt.	Passenger Capacity	Cruising Speed	Engine Take Off Power	Wing Loading	Per Cent of Gr. Load Useful	Gr. Ton-Miles Per Hr. (Cruising)	Passenger-Miles Per Hr. (Cruising)	Empty Wt. Per Passenger
Lockheed Saturn	14,000	4,366	14	198	1,200	27.9	31.1	1,386	2,772	688
Douglas DC-3	25,200	8,400	21	165	2,200	25.5	33.3	2,036	3,465	800
Martin 228	28,500	9,453	26	261	3,000	33.1	33.1	3,719	6,786	733
Martin 202	34,300	12,277	30	270	4,200	39.8	35.8	4,671	8,100	734
Convair 110	36,000	15,000	30	270	4,200	39.7	36.1	4,860	8,100	700
Boeing 431-16	36,000	12,375	30	252	4,200	48.7	34.3	4,536	7,560	788
Douglas DC-8	39,500	15,585	48	275	3,260	35.7	39.4	5,033	13,200	498
Curtiss-Wright CW-28	40,000	13,000	32	288	5,000	45.7	32.5	5,760	9,216	844
Curtiss-Wright CW-20	48,000	15,900	36	234	4,200	35.4	33.1	5,616	8,424	892
Fairchild Packet	50,000	22,000	....	200	4,200	.....	44.0	5,000	.....	.....
Convair 39	56,000	22,931	48	205	4,400	53.4	40.9	5,740	9,840	689
Burnelli CB-7	57,500	26,500	72	300	6,000	25.0	46.0	8,325	21,600	431
Douglas DC-4	62,000	24,241	44	239	5,800	42.5	39.0	7,490	10,516	858
Douglas DC-6	80,500	33,149	52	266	8,400	55.0	41.1	10,707	13,832	911
Lockheed Constellation	86,250	36,050	64	308	9,200	52.2	41.7	13,284	19,712	784
Boeing 377	140,000	65,890	81	333	14,000	81.4	47.0	23,310	26,973	915
Douglas DC-7	162,000	67,694	108	265	12,000	64.5	41.7	21,465	28,620	873
Convair 37	320,000	162,508	204	342	30,000	.....	50.7	109,440	69,764	772

Big boys of the four-engine airline category range from Douglas' forty-four-place DC-4 to Boeing's eighty-one-passenger Model 377 and 108-passenger Douglas DC-7. Lockheed Constellation is sixty-four-passenger contender while Douglas DC-6 is fifty-two-passenger transport. All can be equipped to operate with varying accommodations ranging from stripped-down "day coaches" carrying a maximum load at lowest cost, to super deluxe club planes with commodious sleeping, dining, refreshment and compartment facilities. Optimum cruising speeds claimed are 333 mph. for the Boeing 377, 308 mph. for Constellation, 265 mph. for DC-7, 266 mph. for DC-6, and 239 mph. for the DC-4. DC-7 is commercial version of the AAF's C-74, only recently test-flown by Douglas and incorporating bug-eye cockpit windows for pilot and co-pilot and with ailerons training full-span flaps. Boeing 377 is commercial version of AAF's C-97, adapted from the B-29. Constellation has been in production throughout the war and incorporates many features developed by the P-38 fighter.

American expects to have the DC-3 completely replaced by 1947.

Among recently-announced transport developments are the following types:

Douglas DC-8: A forty-eight-passenger successor to the DC-3, this trail-blazer features tail installation of three-bladed, counter-rotating pusher propellers connected by separate drive shafts to two Allison engines installed in the floor of the nose cargo compartment and developing a total of 3,260 hp. Dimensions include wing span, 110 ft. 2 in.; length, 77 ft. 10 in.; overall height, 25 ft. 9.5 in. It is said to cruise at 270 mph. on 2,050 hp. at 10,000 feet, and operate on a block to block speed of 223 mph. Centerline thrust obtained by the DC-8's pusher propeller installation in the tail eliminates off-set thrust in case of engine failure, and by removing engine nacelles from the wing reduces the overall drag coefficient by 25 per cent. It also "cleans" the wing for better lift distribution, elevates the propellers to a more efficient position, eliminates weight through reducing landing gear length and hydraulic mechanisms, cuts cabin noise level and affords greater visibility to passengers, who can enter the plane without propeller blasts with engines running. The DC-8's engines are accessible in flight, and are serviced at "waist level" on the ground through cowling doors which operate like bomb bay doors. Douglas is developing a cargo version and, for private ownership, an executive transport version of the DC-8.

Boeing 417 and 431: Preliminary specifications to the airlines have attracted interest in two twin-engine, tricycle, high-wing transports. The 417 is of twenty-passenger capacity for feeder-line use, and cruises at 200 mph. The 431 is of thirty-to-forty-passenger capacity and a 252-mph. cruising speed is claimed for it. In both transports passengers can carry their own baggage in and check it with the steward. Boeing's 417 and 431 are in the "paper aircraft" stage and probably will undergo design changes to meet possible airline recommendations.

Martin 202 and 228: Two new Glenn L. Martin transports are variations of a basic twin-engine, low-wing, tricycle design. Model 202 is of thirty-to-forty-two-passenger capacity, with a cruising speed of 270 mph. at 70 per cent power, while Model 228 is a twenty-six-passenger transport with a cruising speed of 244 mph. at 70 per cent power. The 202 is a development of the original Martin Mercury described last year in SOUTHERN FLIGHT.

Lockheed, Consolidated Vultee and Curtiss designs for postwar airline operations have been described in previous issues of SOUTHERN FLIGHT.

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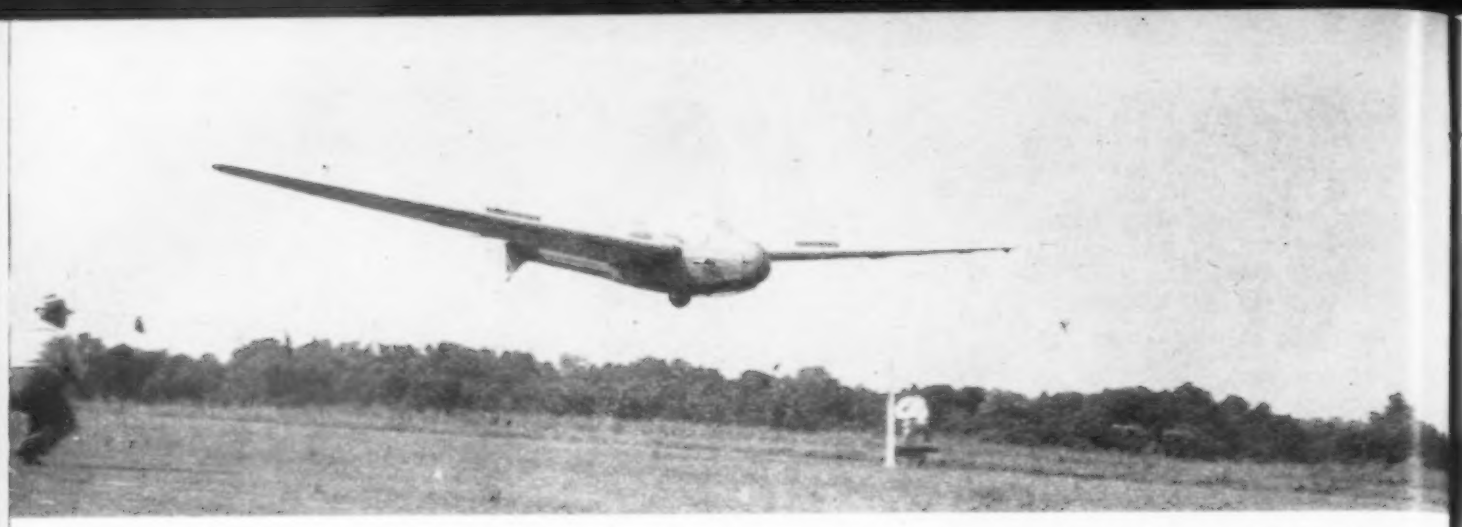

Spot landings in Yankee Doodle Two are done with much precision, and even the most obstinate student can learn to stop a glider at any point along the runway, even downwind.

The Gliders Are Coming

A leading manufacturer has embarked on an intensive program to encourage greater use of gliders for pleasure and commerce.

By RUSS BRINKLEY

STARLING airport, on the outskirts of St. Louis, is the base for an experiment that is destined to play an important part in the development of the glider industry. It is there that the Laister-Kauffmann Aircraft Corporation is to erect a new factory for the production of the two-place Yankee Doodle Two models and conduct a glider flying school for their dealers and distributors. Representatives who do not as yet know the rudiments of glider flying will undergo training in the motorless craft at St. Louis and then return to their home bases where they will teach their clients and demonstrate L-K products. The foreign market has not been overlooked and sales organizations from other nations will also assign representatives to the school for training in glider flying, towing and pickup.

South and Latin America and Alaska will be represented at this school in Laister-Kauffmann's plans to exploit the glider in such out of the way places where supplies may be dropped and gliders picked up from small clearings in the mountains. At the present time, the manufacturers are planning a demonstration tour abroad, towing one or more of their military type Trojan Horse gliders behind a war surplus B-23 bomber. The foreign sales department has completed plans for the tour and the pilots will be men who formerly flew rubber out of the back country of South America when wartime needs required. Miners and other interested parties have already been contacted and are looking forward to inspecting the equipment made available by the cessation of hostilities. The Trojan Horse carries a large load and may be landed in very small clearings. When empty or loaded it may be easily snatched up and flown back to the operations base. The firm is depending upon this combination to provide the answer for transportation south of our border and in the back country of Alaska.

In addition, Laister-Kauffmann will operate a school for individuals who desire to learn glider piloting. Heretofore, pilots of conventional airplanes shunned gliders, many believing them to be a plaything. Recently a different attitude has become apparent and a number of conventional airplane pilots have been taking to the motorless craft. Because of this new trend, I recently accepted an invitation from L-K to be the first student at the Starling base. I took my first tow flight as a matter of curiosity, but after only one trip aloft I was bitten by the bug and was eager to continue my education in gliding and soaring. For the benefit of others who will later develop a desire to glide, some of the interesting highlights of my experiences as a glider student may be of interest. Certainly my observations will be similar to those of the average airplane pilot and they may also provide some information of value to one who has not yet become acquainted with any phase of flying.

Downwind Landings

Fortunately for the regular glider student it will not be necessary to make downwind landings each time as I did at St. Louis. On days I devoted to glider flying the field was still in process of development and was not wide enough to accommodate the five gliders and tow planes we had in operation. For this reason, the planes landed into the wind and the gliders landed downwind. This meant that when the gliders came to a halt on the ground they could be turned about and fastened to the tow line for the next trip aloft. The penalty for any student who failed to steer his glider to the starting end of the field on landing was for him to buy a coke for the instructor. I owed three cokes by the time I was ready for solo tow flight. If the glider does not coast to the starting end of the field it means that the field crew must be called to push it to position. It also means that the center of the field will not be clear for the landing of other planes and gliders. A landing glider cannot overshoot and go around without power.

Howard Blossom was my instructor during my first flight in the Yankee Doodle Two. I flew several ships of the same model but their performance was almost identical. My tow pilot was Mickey Efferson, former rubber pilot in South America, whom I had known for many years. Mickey and

I had worked on air shows together in the barnstorming days and I knew his ability.

On my first trip aloft I flew in the rear seat, which offers very little visibility except to a trained glider pilot. This was merely a familiarization flight so that I might learn to handle the machine better in the air. Following the twenty-minute flight, during which I demonstrated my ability to perform the desired and prescribed maneuvers, I was assigned a new instructor—a girl no less. She was Margaret Needham, one of the regular instructors at the school and a former WASP. Margaret was very patient because it is difficult to teach an old dog new tricks. I was all right during the descent part of each flight but I did encounter trouble on the take-offs, a regular shortcoming even of the most experienced airplane pilot.

Due to the fact that my time was limited I did not have an opportunity to study or ask as many questions in advance as will the regular student. All of my glider education was gained in the cockpit and for this reason I took more time to reach the solo stage. With a bit of advance study on the theory of gliding I might have completed my first stage of training in much shorter time.

Launching by Tow Plane

Five Boeing Kaydet training planes are used for towing at the school and they are joined to the gliders by two hundred-foot nylon ropes. Releases are installed both at the nose of the glider and in the cockpit of the tow plane so the gliders can be cut loose at either end at any time. There is no slack in the rope at the time of take-off. The plane is taxied to position ahead of the glider. The releases are tested under pressure. Holding the wings of the glider, the full crew gives the ready signal, a wave of the hand, and the flight gets under way.

There is a single wheel on the undercarriage and it must be kept balanced as soon as the field crewmen let go. Only a little forward speed is required to keep the glider wings level but an amateur can easily drop a wing or zigzag a take-off to the point where he causes undue drag on the plane ahead. It is imperative that the glider stay directly behind the tow plane during take-off. As soon as a speed of approximately forty miles an hour is available the glider may be lifted and sufficient slack allowed in the tow line so that the plane may take off. The glider takes to the air while the plane is still running along the ground. When the airplane gets into the air its speed soon takes up the slack in the line and the glider remains behind but about ten feet above the power plane. If the glider cruises any higher it is liable to lift the tail of the plane to a dangerous position. If it flies below the level of the tow plane it will be disturbed by the downwash and cause hazardous drag. Either of these could cause trouble for the pilot of the tow plane but before he will let it go too far he will be able to cut loose the glider and continue on his way. In event the glider flies so high above the tow plane that it would not be practical to dive to lose altitude, the wing spoilers are brought into play. A medium pull on the spoiler handle will drop the glider several feet almost immediately. This is not recommended for the new student, unless previously instructed, as he may drop the glider too far and end up in a worse position in the downwash of the tow plane.

Twenty-Minute Hops for Students

During straight and level flight the glider always should ride a few feet higher than the tow plane. When turns are to be made to right or left the glider should be banked in the desired direction as soon as the tow plane is banked. The glider must never get on the outside of the turn as it may be swung about as the cracker of a whip, and the ensuing jerk at the end of the turn may provide hazardous drag on the tow plane or cause some structural failure at the towline release point. Shallow turns only are made by the tow plane and the glider turns will be of similar bank and rate of turn. When possible, towing is conducted over clear terrain so that fewer air bumps will be encountered and suitable places may be found for emergency landings.

Gliders and sailplanes may be towed to any desired altitude, depending upon the purpose of the flight. We found thirty-five hundred feet provided sufficient time and altitude for training maneuvers to be practiced in the air before each landing. Each flight from this altitude consumed about twenty minutes, but to the novice the time is much greater. The first three thousand feet were used for maneuvering in turns, stalls and even spins. The last five hundred feet were required for crossing the airport and maneuvering to land on the designated spot.

When the desired altitude is reached, the glider is usually cruising above the airport. The glider pilot cuts loose when he is ready by pulling the release lever. The tow plane banks and turns to the right while the glider is turned and glided slightly to the left. This gives the tow pilot an opportunity to clear away, fly across the airport downwind at low altitude, drop the tow rope and then turn around into the wind and make a landing before the glider reaches the earth.

The glider requires more time to reach the ground. When coming in over trees or other obstructions on the final landing glide, it may be dropped as much as desired by use of the spoilers as soon as it is certain that no difficulty will be encountered in reaching the landing spot. Spoilers may be used right down almost to the ground and the glider is landed in a slightly tail-high position on the single wheel. Landing downwind the glider will have a tendency to travel faster and farther on the ground and the wheel brake must be applied so as to slow down in time to stop at desired point. The wheel brake is operated by the same lever which controls the wing spoilers. The first half of the arc of travel of the control lever operates the spoiler and if you pull the lever farther back brakes are applied on the single landing wheel. After a few landings even the most obstinate student can learn to drop a glider at any desired point along the runway, regardless of the direction of the wind.

There is no doubt that more and more airplane pilots will take to gliders for

(Continued on page 82)

Taking off in tow of a Boeing Kaydet trainer requires caution against imposing too much drag on the tug. The Yankee Doodle Two is lifted at about 40 mph., while tow plane is still on the ground. Only slight forward speed is necessary to hold wings level at start of take-off.

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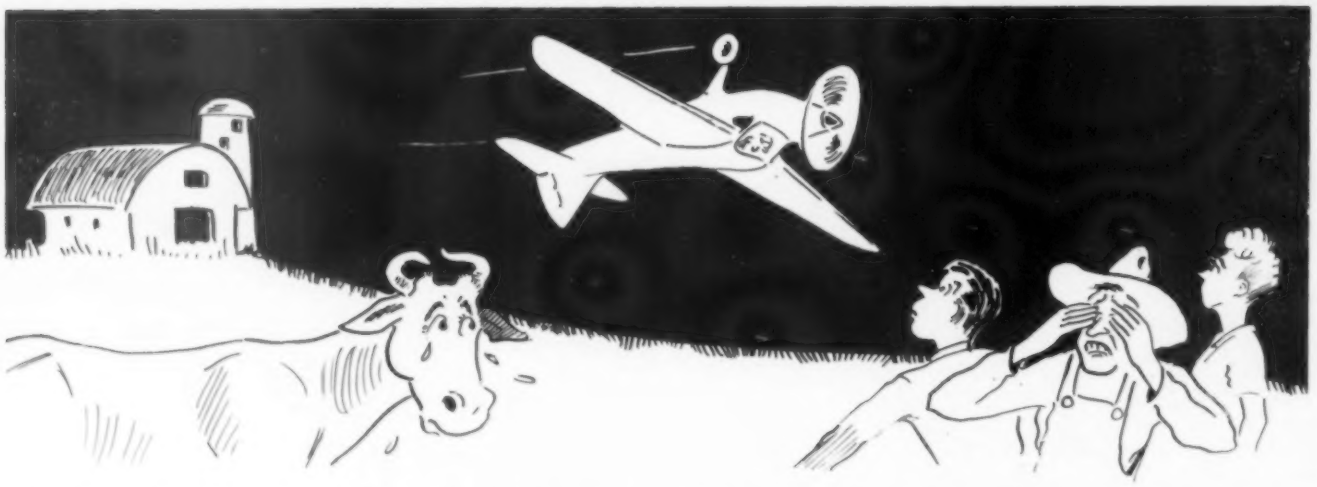


"Nowadays there is an occasional pilot who writes finis to his career while demonstrating his skill to impress his family or friends—particularly girl friends."

CONFESSIONS of a Flight Instructor

By A. H. KNOUFF
Lt., A-V (T), USNR*

—Illustrated by Lt. Joe James, USNR.

IN the old days, every air show took a toll of lives from the amateurs who tried to imitate the stunts they had seen. Nowadays there is an occasional pilot who thinks he is an expert stunt flier because he had a CPT or military course in aerobatics, and writes finis to his career while demonstrating his skill to impress his family or friends, particularly girl friends.

I was one of the lucky ones. I saw a Piper Cub slow rolled, and decided to try it in a Model K Aeronca. I read Joe Mackey's book on aerobatics and took myself up to do what he said. I don't know how nearly I came to tearing the wings off before realizing how much forward pressure it takes to keep the nose from dropping into an inverted dive when you get on your back. I learned later this is the most common error of all beginners in aerobatics involving inverted flight.

For this reason I usually led my students up to it by flying back toward the airport upside down at the end of each early lesson of the aerobatic course. About the third lesson, I would roll over in line with a straight highway, and tell them to take over and fly straight down the road. The result was invariably the same as my own early experiments—except that I was there to take over before the dive became excessive and to roll out instead of looping out with excessive "g's".

*Opinions and assertions herein are the author's, and are not to be construed as official or reflecting the views of the Navy Department or the naval services.

Why Go in for Stunts?

I have always liked to do slow rolls, but I do not approve of them because they serve no useful purpose in the primary function of an airplane—fast, safe, comfortable transportation. I do not approve of aerobatics in general, but do recommend that every student be taught a few simple maneuvers to develop relaxation and proper reaction to emergencies. Slow rolls, snap rolls, reversements, or Cuban 8's are not necessary to do this. Wing-overs and chandelles will provide experience of control at low speeds, and need not be deferred to an advanced or secondary course. The fact that "Sunny" Sundorph put me through these maneuvers before I soloed probably prevented an early end to my own flying career.

During my second solo lesson, I was bringing a Curtiss, Jr., in for a landing when a gust put me in a 90-degree bank. The situation felt much like the position from which I had rolled out of a chandelle; I pushed full top rudder, forward stick and top aileron. If I had never been in that position before, I might have tried to pick up the wing with aileron alone and spun in. Some pilots will argue that students should be taught inverted flight for the same reason, but it is not often —if ever—that an airplane actually gets on its back by accident, and the pilot who has learned the principles of control in simple aerobatics can handle it.

There is no danger and no excessive strain on the airplane in aerobatics properly done with plenty of altitude. Leonard Peterson made a chart of the act he performed at the National Air Races, including the accelerations at critical points in his maneuvers. At no time did the stress exceed 2g. That is expert piloting. "Pete" also spent many hours perfecting each maneuver at 10,000 feet. Before he put it in the act, he would practice forced landings from every position in the maneuver, observing on two sensitive altimeters the altitude needed to recover and make a normal landing. Then he allowed twice that much altitude when he did his stuff in the show. "Pete" was one of the most expert stunt pilots of all time. Yet the unexpected got him. Some say the windshield blew out of his plane, others that tricky air was to blame. I have told nearly all my students, when they are tempted to show off how good they are, to remember that they are not as good as "Pete" was.

I used to dream of sitting down at a piano and miraculously finding myself able to play it like Paderewski. Needless to say, that dream never came true. Jimmy Doolittle, Al Williams,

Tex Rankin, Milo Burcham, Mike Murphy, "Squeak" Burnett, Harold Johnson, Lee Gehlbach, and a few others like "Pete" made aerobatics look so simple that if they had not done their acts within a few feet of the ground the crowd would not have gotten any thrill at all. The punks who tried to imitate them on the way home remind me of my dreaming that I could become a great pianist without the tedious training, thinking and practicing.

Control in a Loop

Fortunately, the number of instructors today makes it unnecessary to be as foolish as I was to satisfy one's curiosity about acrobatics. Almost every one of your students will ask you to satisfy this curiosity to some extent. The first thing they want to do is a loop, and with many it will end there. From the ground, the loop looks far more spectacular than a slow roll and the majority of spectators and beginners look upon it as the pinnacle of flying skill and thrill. You may say, as I often do, that it is so simple that it is hardly worth teaching, but they will remain unconvinced; so you might as well take them up and show them.

Nearly anyone can muddle through a loop, but it is possible to put an overload on the airplane, and it takes some thought and skill to make it look good from the ground. An important factor in the latter is starting the loop into the wind. Unless the engine is designed to run upside down, the radius of the loop will become shorter as the plane climbs through the first half, and the ship will descend in a rather flat arc in the latter half. If the wind is pushing the airplane away from the center during the final portion of the maneuver, it will appear to make a more nearly perfect circle. Another reason for starting directly into the wind is that drift would make it harder for the pilot to hold the plane straight directionally.

The first mistake likely to be made is starting the loop with excessive speed. This results in mushing, undue stress on the plane, and may even defeat its purpose by causing a high-speed stall before reaching the top of the loop. Tell your student to notice his airspeed at the top of his next loop. Then tell him to watch the airspeed while you do one. Call his attention to the fact that you had as much or more speed at the top, although your initial speed was considerably less than his. Actually a loop can be done with an initial speed almost as low as normal cruise.

The second principal error is pulling the stick back too much at the top which may produce a normal stall even though the airplane is inverted. Many pilots have been puzzled by having their ship do a perfect half-snap into level flight at this point, and have tried to correct it by starting with more speed. This only made the situation worse. The answer is to relax the elevator pressure and let the nose drop of its own accord. As the plane descends, back-pressure on the control will increase and the pilot must hold it to prevent an excessive dive.

Another point to which you may have to call your student's attention is that in the initial dive he has to hold left rudder to keep the airplane straight; as he starts climbing up the first half of the loop, he must relax on the left rudder and start pushing the right; and as he completes the last half, he must reverse rudder pressure again. He may fall off to one side or the other at the top of the loop. This may be mistaken for a stall, but is really due simply to not having the wings level. It can be corrected by watching the wing tips in relation to the horizon, just as in ordinary flying.

Tips on Chandelles

Although almost everyone knows what a chandelle is, there is considerable variety of opinion on exactly how it should be done. There is no definite degree at which a steep climbing turn can be said to become a chandelle. At the other extreme, a chandelle comes close to being an immelman. Between these two extremes the chandelle requires a progressively increasing degree of skill on the part of the pilot. The value of the chandelle as a training maneuver is that the speed, attitude, and controllability of the airplane are constantly changing and that the student must realize these changes and regulate them to produce a 180-degree change of direction and gain in altitude. There is an infinite variety of

"Acrobatics can be done just as perfectly at 3,000 feet as they can at ten feet off the ground before a sadistic audience."

"The punks who tried to imitate expert stunt pilots were like my dreaming that I could become a great pianist without tedious training, thinking and practicing."

mechanical manipulations of the controls which may produce this result, so that instructors who argue whether a chandelle should be started from a dive or level flight, with full throttle or cruising power, with rudder or with aileron alone are losing sight of the main objective. Teach your students as many different ways of doing a chandelle as you can.

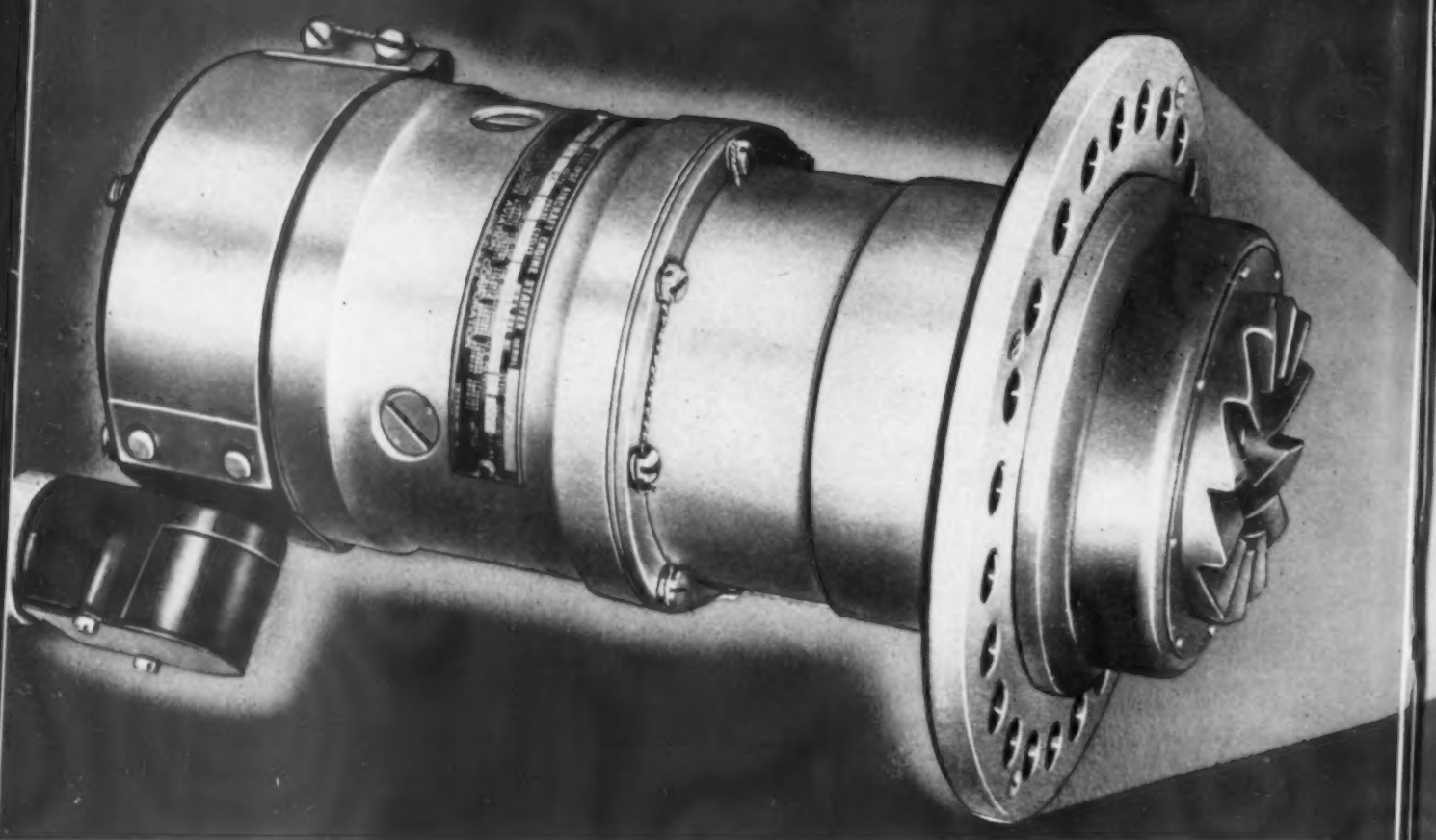
If the chandelle is started from a dive, it should not be so steep or prolonged that it loses more altitude than can be regained in the maneuver itself. As in the loop, the pilot must not kill his speed by pulling back on the stick too much or too fast. He must watch the ground to see when he has completed half of his turn, at which point he should be getting all the possible climb out of his ship—as close to a stall as he can get without mushing or actually stalling. From here on, alertness to control pressures and attitude of the ship, as well as smooth technique, are demanded. Abrupt use of an aileron may stall the wing and cause it to fall out or recover sluggishly. Holding back-elevator pressure too long may cause the ship to stall before the 180-degree turn is completed. Relaxing it too soon may result in failure to get the maximum gain in altitude, or loss of altitude already gained. A common fault is to consider the chandelle complete when the wings have returned to level and dropping the nose to the horizon too soon, which results in settling while cruising speed is regained. On the other hand, recovering with the nose too high may cause a stall or mushing.

Sometimes a student is puzzled because he cannot hold the nose above the horizon—or at least on it—when he recovers from a chandelle. Often this is accompanied by what seems to be a rapid recovery at the last moment. What has really happened is a partial stall and loss of control. His recovery has not been carried out rapidly

(Continued on page 82)

LIGHTWEIGHT

Eclipse aviation



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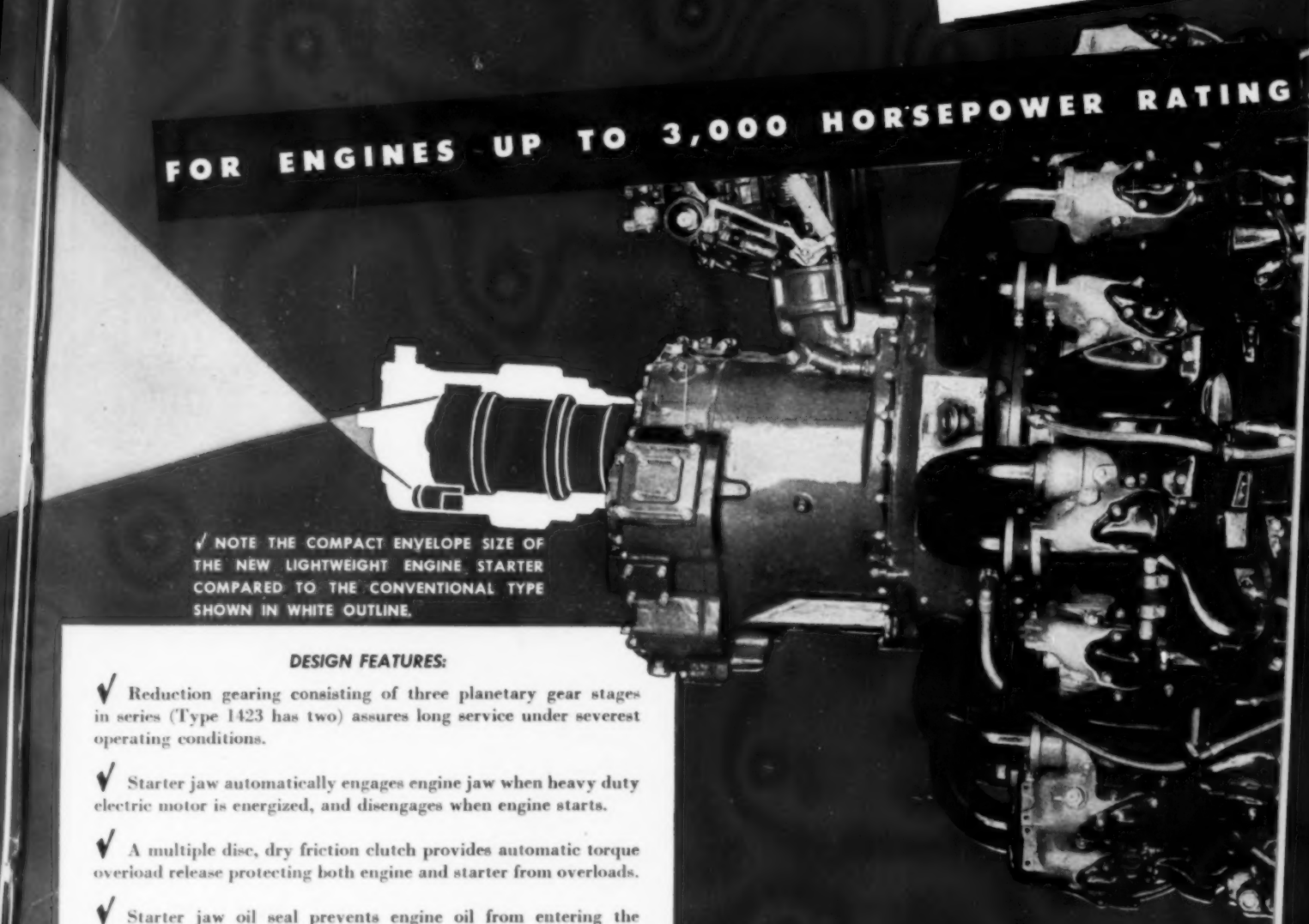

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Troop Carrier Operations in Modern Warfare

Massive troop movement by air has given airborne attack more combat effectiveness.

By BRIG. GEN. WILLIAM D. OLD
Former Commanding General, I Troop Carrier Command

WHEN the Japs decided to run up the white flag of surrender, the Nipponese homeland had felt the destructive force of the atomic bomb, our B-29 Superfortresses, and thousands of light carrier planes. But that was only the beginning of triple-trouble to come. Famous Troop Carrier groups of the First Allied Airborne Army in Europe were on their way to the Pacific and airborne assaults as developed and perfected against the Germans, were "hanging heavy" over the Jap head.

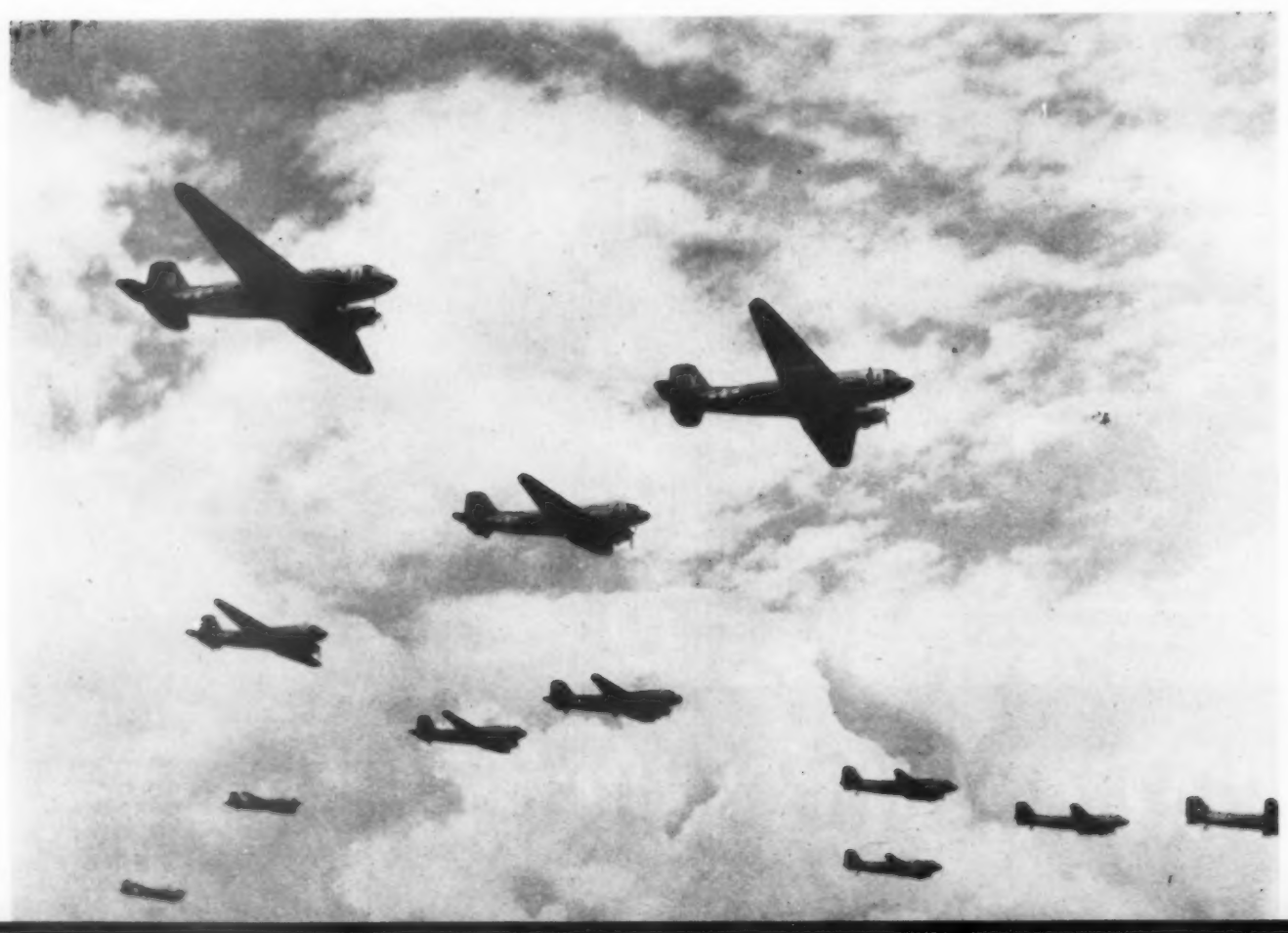
While paratroopers were used on several occasions and aerial resupply has long been an essential part of General MacArthur's war machine, airborne warfare on the massive scale staged in the European Theater of Operations has not been possible previously against the Japs. But full armies were to be dropped from the skies behind Jap lines—giving the already nervous Nips considerably more to worry about.

Airborne attack, performed through the teamwork of the pilots and crews of the Army Air Forces Troop Carrier Command and the specially-trained airborne troops of the Army Ground Forces, led the way in many turning-point offensives of our assault upon the Nazi fortress. Outstanding success marked these campaigns in North Africa, Sicily, Italy, Normandy, Southern France, Southern Holland, and across the Rhine in Germany.

Proved in Europe as one of the most effective weapons of modern warfare, airborne attack remained to be tried on a large scale in the Pacific area. The Troop Carrier Command, supported by a wealth of invaluable experience, stood ready to perform tasks similar to those achieved in Europe.

The experience backing up Troop Carrier for its role in the concerted effort to flatten Japan was of two kinds. First, it was learned in the European war how to mass vast numbers of airborne troops and Troop Carrier pilots, combat crewmen and aircraft for paralyzing strikes at the enemy. Second, through a continuance of airborne operations against the Japanese, Troop Carrier knew the problems it faced in bringing Nippon to her knees. The assaults already accomplished in the Pacific theater and

These C-47's flying to the Holland invasion front on a paratroop mission paved the way for future employment of four-engine planes carrying complete armies great distances. Airborne attack was greatly improved between D-Day and the German surrender.



the China-Burma-India theater, although of lesser size than those on the opposite side of the world, had nevertheless been very important ones and had shown us what the going would be against the enemy once we directed the full strength of Troop Carrier against the Japs.

The planning of new attacks, the striking of new blows against the Japanese forces in the Pacific, was conditioned by one far-reaching, ever-present consideration—space.

The nature of the Pacific battle theater with its series of small islands, separated by long over-water distances, called for a type of warfare far different from that of the European theater, especially in the size and types of equipment. Larger Troop Carrier airplanes were to be used, carrying bigger loads of troops and supplies and equipment, over vaster distances. Cargo airplanes with longer range and greater capacity were built for Troop Carrier combat duty in the Pacific, and the program of transition training for pilots and crews was stepped up as rapidly as the new aircraft were received.

In the European warfare, the C-47 "Skytrain" planes and CG-4A gliders were used to accomplish the major portion of Troop Carrier activities; however, the C-46 "Commando" plane recently added as standard equipment for Troop Carrier operations has already had its baptism of fire during the airborne operations at the Rhine.

Against the Nazis, Troop Carrier Command planes spearheaded every major invasion of the war. North Africa, Italy, Normandy, Holland and Germany—in all, the task of Troop Carrier has been primarily leading each tactical assault. Thousands of paratroopers were dropped, glider armadas flown in and tons upon tons of supplies and reinforcements were delivered to vital invasion points. On the way back from front-line strips thousands upon thousands of sick and wounded soldiers were evacuated by plane to hospitals behind the lines.

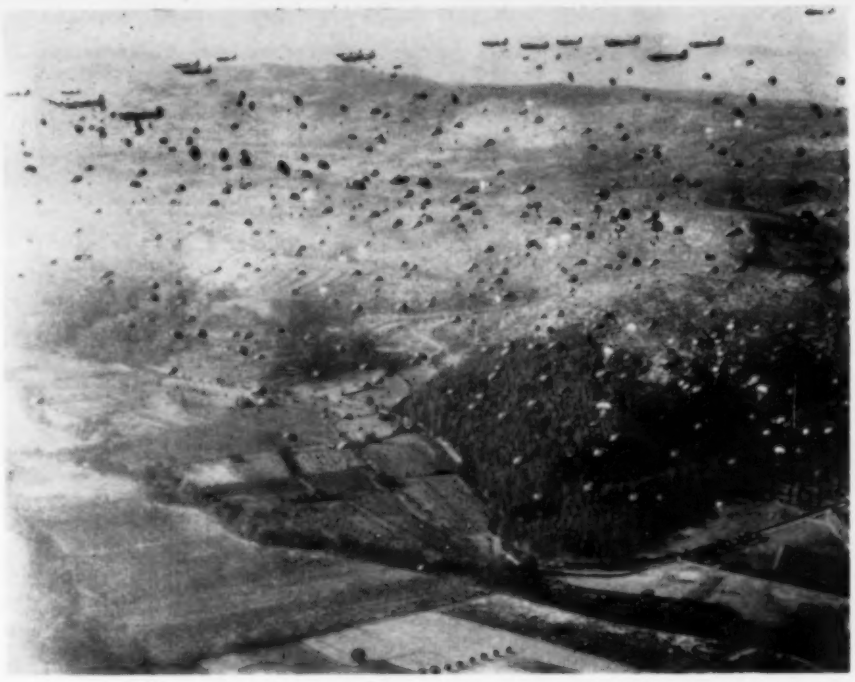
In the really first large-scale daylight operation, the First Allied Airborne Army — the combination of Troop Carrier air force units and Airborne ground force units under one commander — dropped three airborne divisions behind bridges crossing the Weal and Maas Rivers.

Troop Carrier proficiency has improved greatly with practice. In Normandy, it took something like three days to get the airborne forces assembled—largely because in the night operation over swamps and marshes, various elements were dropped astraddle the streams and had difficulty in reassembling under fierce enemy attack. In the Netherlands operation, one hour and a half was needed; here, daylight conditions prevailed and for a time, such limited enemy opposition that objectives were taken by midnight.

In this one operation, a total of 5,292 aircraft was dispatched along with 2,602 gliders, carrying in a total of three divisions of airborne troops. In addition, 4,595 tons of freight were delivered.

Many of the Troop Carrier groups used in the European Theater had returned to this country. The first Troop Carrier group to return as a unit was the 316th Group, veterans of nine campaigns in the Mediterranean and European Theaters of war.

In all operations during their thirty



Airborne troops parachuting out of Troop Carrier Command planes during the airborne invasion of Southern France.
—(Troop Carrier Command Photo.)

Some of hundreds of Troop Carrier Command gliders awaiting "snatch pickup" and return to rear bases for future action. These are shown on one of the glider landing zones in the Southern Holland invasion of September, 1944.
—(Troop Carrier Command Photo.)

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months overseas, the 316th accumulated 122,597 hours of flying, while gliders in the group had a total of 5,625 flying hours. The group hauled 50,489,577 pounds of freight, flew 106,089 passengers, and delivered 5,420 airborne troops on combat missions. They participated in the North Africa, Sicily, Italy, Normandy, Southern Holland, and Rhine invasions.

The 434th and 435th Troop Carrier groups, among the first to arrive in England for the expressed purpose of participating in the battle of Europe, returned to the States with an equally colorful record of achievements similar to the 316th Group. Both participated in the Normandy D-Day invasion, Southern France, the Holland airthurst and the aerial crossing of the Rhine in Germany. In addition to these major operations, these groups flew continual resupply and evacuation missions, including the rescue of the 101st Airborne Division at Bastogne.

During interims between tactical missions with airborne troops, the 435th carried over 41,000,000 pounds of freight. On return trips, 60,000 patients or freed prisoners of war were flown to rear area hospitals and redeployment points. In May, when displaced Russian nationals in Western Europe were ready for repatriation, the 435th was selected to carry the initial loads.

Between Normandy D-Day and VE-Day, the 434th Troop Carrier Group delivered 42,500,000 pounds of freight to front-line landing strips in support of advancing American armies; 2,300,000 gallons of gasoline, evacuated 25,000 wounded, flew 2,500 paratroopers into combat and landed 1,400 glider troops in combat zones.

Such is the record of the 316th, 434th and 435th Troop Carrier Groups, three of many more similar groups in Troop Carrier, who were taking redeployment training here in this country preparatory to adding their weight to the Pacific Theater of war.

Airborne warfare against Japan, although not as massive as European operations, proved to be of immense value. But this new weapon achieved more than material results — it became a psychological weapon of the "heavy, heavy, hangs over thy head" type.

The Japanese were definitely afraid of airborne warfare. Their loss of Burma can be traced back to the success of airborne operations in that theater. It was a grave disaster to them as it deprived them of an entire flank and laid their forces in Southeast Asia open to much further assault.

It took weeks for the Japs to dislodge us from Corregidor when we were abandoning the Philippines in the early, dark days of the war. But when General MacArthur led us back to the Philippines, paratroops dropped right on top of the Japs imbedded on Corregidor, and within a few days that fortress guarding the harbor of Manila was entirely in our hands.

The Japanese military leaders know all about glider and parachute troops who spearheaded the invasion of Normandy to guarantee a foothold on Hitler's fortress Europe. They knew Normandy was as well defended as the Japanese homeland could ever hope to be.

The Japs proceeded to show their fear of airborne attack through their doctrine of denying us — by defensive and demolition measures — as many potential launching and landing bases for airborne operations as possible.

Prior to the Japanese surrender, Troop Carrier units of the 5th, 7th and 13th Air Forces in the Pacific participated in various airborne attacks. Successful airborne attacks were carried out in the Markham Valley where 1,600 paratroopers were dropped. A full division of Australian fighters were landed at Nadzab; the American 42nd Division was flown from Townsville, Australia, to Port Moresby to save that port when the Japs were only seventeen miles away; and in the West Leyte campaign, Troop Carrier planes dropped the 11th Airborne Division by parachute; and in the southern Philippines attacks, Troop Carrier glider squadrons were used for the first time.

Far overshadowing these missions were the continuing and ever-expanding task of Troop Carrier units in tieing together the vast pattern of American bases, airfields and islands, scattered over the entire Pacific. Sometimes operating with Marine and Naval transport squadrons, but more often carrying on alone, the Troop Carrier units were the circulatory and nervous systems which kept the allied military body sustained and functioning.

There were no railroads, no truck lines, to connect the large ports and depots with the troops and air force squadrons riding close upon the heels of the retreating Japs at the front. The limited supplies and forces of the Pacific could not be delayed in depots by slow boat delivery. The swiftness of General MacArthur's advance demanded the speed of transportation by air — by the Troop Carrier Command.

No wonder the Japs were worrying more and more. With the Troop Carrier groups from the European Theater joining older Troop Carrier groups operating in the Pacific, sparks were beginning to fly. These units had much new equipment, particularly, the C-46 "Commando" planes, and were readying for C-82 cargo planes. With these it would have been possible to fly longer distances, carry double the amount of airborne troops, vital artillery, ammunition and supplies.

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(Continued on page 84)

Latest addition to the Troop Carrier Command's armada of cargo planes is the C-46 Commando, which received its baptism under fire in the air invasion across the Rhine. (Troop Carrier Command Photo.)

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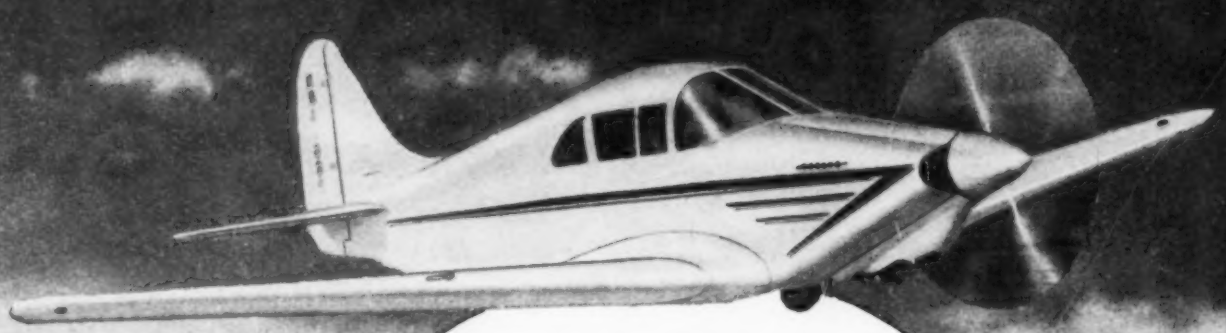

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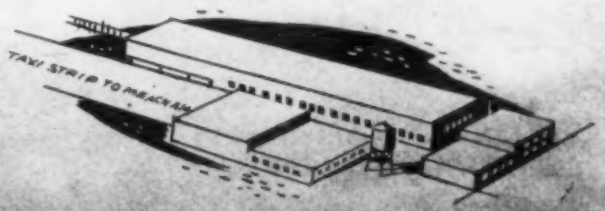

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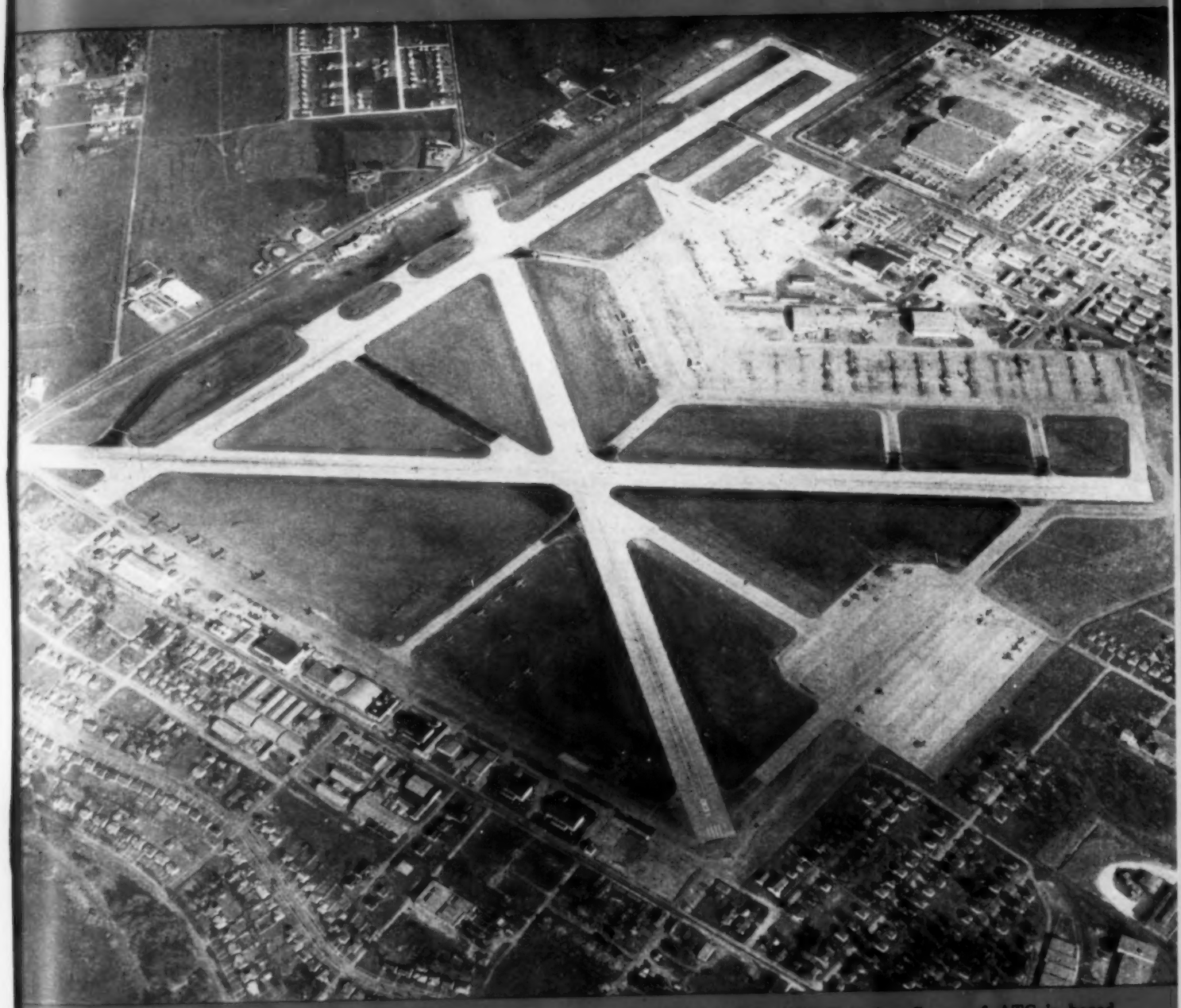

First photo of Love Field at Dallas to be released for publication since 1942. The Fifth Ferrying Group of ATC is based there (center, right), and the Lockheed modification center (top, right). North-South and Northwest-Southeast paved runways are 5,200 feet long and 150 feet wide, and the East-West paved runway is 4,500 feet long and 150 feet wide. The Army spent $4,793,000 on Love Field during the war, of which about $1,800,000 went into runways and concrete aprons. Hart Bowman is city supervisor of aviation. Major Charles Hanst returned from the Air Transport Command on October 16 to resume his duties as airport manager. —(AAF Photo.)

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Community Provisions For Airport Development

By LEIGH C. FISHER

Airport Division, Giffels & Vallet, Inc.
Detroit, Michigan

THERE has been much discussion of the development of civil aviation in the postwar period. Now that most postwar projects are beginning to crystallize, the National Airport Plan will, in all probability, be enacted. Federal aid for the development of airports will provide a well-integrated network of landing facilities throughout the nation.

Under the National Airport Plan, runways and taxiways will be constructed according to the plans of both state and federal aviation bodies, but the design, scope, and size of the terminal and service facilities will be the responsibility of the individual community. The co-ordination of landing, terminal and service facilities into a unit, insuring maximum efficiency and operation, will also be the responsibility of the community itself. Not only does this co-ordination provide efficiency in operation, but it also can be the basis for making the airport a profitable operation. Many communities are realizing that the operation of an airport need not be a financial liability and are designing the airport for business-like management.

Experience of various communities has shown that if the airport can be operated at a small yearly deficit, or if it can pay its own way, very little objection is forthcoming to the development or expansion of airports. This indicates that not only aviation interests but also the general public are becoming concerned with the financial operation of airports. For this reason a definite need is shown for a realistic, business-like planning of the airport.

Thorough Local Plan Needed

An aviation commission should be established in each community where none now exists. This commission should be charged with the responsibility of developing all plans pertaining to the construction or expansion of the airport as well as its operation. Members of the commission should be selected more for their interest in the community and their general ability, rather than for their knowledge of aviation, although the latter is helpful. The members should be familiar with construction, legislation, merchandising and business management.

The executive head of the city government should be a member, as should the airport manager, when the airport is in operation.

To insure the maximum revenue, operating efficiency, and longevity in a new airport, or when planning the expansion of an existing one, counsel and advice will be needed. The Civil Aeronautics Administration Airport Section should be consulted for general information, but all detailed planning, particularly for larger airports, should be made by engineers specializing in the planning, design, and co-ordination of airports and terminal buildings. The chief reason for this is that the designing of a large airport to secure the most efficient and profitable operation requires an accurate analysis of the various phases of the airport's operation in each separate community. To accomplish this, study of economic conditions of the community must be made as well as a co-ordination of plans with the local interests and needs. This, in essence, means that the airport should be "tailored" to fit each community's needs. This type of individual community analysis requires the services of engineers and economists to collect and analyze all available data and to prepare a financially sound airport program suitable to each community's needs. It should be the responsibility of the aviation commission to supervise and examine all findings of such a program and to approve its acceptance.

ABOUT THE AUTHOR: Following his release from the Army Air Forces in 1944, Mr. Fisher was selected by Pat Moore, Secretary-Treasurer of the American Association of Airport Executives, to be a "guinea pig" in an airport management project in which he was enrolled at the University of Texas in the nation's first recognized course in airport management. Completing that, he was employed by Giffels & Vallet, Inc., engineering firm of Detroit, in its Airport Division. He now heads a new department in the firm which will assist airport management in revenues, financing and operation. Mr. Fisher is a member of the American Association of Airport Executives. The accompanying article is the first in a series prepared by Mr. Fisher for SOUTHERN FLIGHT.

After the program has been made and plans developed, the commission should recommend any necessary financing program, and arrange for the construction of the planned facilities as needed.

In general, the formation of the commission will provide some group which can make plans for the expansion, construction and operation of the airport.

That a group of this type is needed is supported by the fact that at the present communities having definite plans will be the first to obtain Federal aid not only in funds under the National Airport Plan but also in surplus airport equipment. For this reason immediate action is necessary to assure the county of an airport through which it can become part of the aviation network of the nation.

Steps to Follow

An outline of the steps necessary to arrive at a profitable and efficient airport operation is as follows:

1. Formation of an aviation commission, granting it full authority for planning, construction, and operation.

2. Obtaining of advice and assistance from Civil Aeronautics Administration Airport Section and from engineers specializing in airport development, depending on size and scope of the airport needs.

3. Acquisition, investigation, and research of all pertinent data.

4. Analysis of data.

5. "Tailoring" of the airport planning to the individual community's needs.

6. Construction of needed facilities.
7. Selection and employment of an airport manager.
8. Use of sound business judgment in granting leases and contracts to airport users.

A community following the above outline is assured that it can have a most satisfactory airport operation, and one suitable to its individual situation, but only if care and discretion are used in each phase of execution.

The responsibility of practical airport operation does not end in the community. Every phase of aviation and public interest is concerned with each individual airport. Only by careful planning, well-selected personnel, and the use of business methods at airports in each community can the development of aviation in the future grow to its expected size.

Consequently, the selection of members of the aviation commission, of the consultants for airport planning, of the contractors for construction, and of the airport manager for operation, are features of interest to the general aviation field. The community which realizes this and selects individuals or groups acceptable to aviation in general will aid in the development of aviation, and, therefore, of the community itself.

A practical design and a progressive, business-like management of the airport are of importance both to the aviation industry and to the community. Therefore, if the airport is established and operations are not satisfactory, the public will not support the expansion and development of the airport.

To avoid such a condition the commission should select a capable airport manager. One of the most important phases of airport operation is the manager's and, since the trend is toward profitable, business-like airport management, great care should be used in his selection.

At the present, trained airport managers are at a premium, but the coming discharge of servicemen into civilian life will provide a great number of qualified men, after they have had additional training in civil airport operation. There is a vast difference between military and civil airports in their design and operation. As the servicemen return to civil life and decide to enter airport management, they will realize that, while their background in military aviation is helpful, an additional period of training will be required to adapt themselves to civil aviation. The job of the airport manager is essentially the organization, supervision, and promotion of a business and service organization. He should be trained in business methods of accounting, law, advertising, office management, and a few pertinent phases of civil engineering to discharge his duties adequately. At the present time universities are recognizing the need for airport managers trained along these lines and are providing courses designed to adapt a military aviation background to civil airport operation. The returning servicemen who take advantage of the G. I. Bill of Rights and use the schooling to obtain such training will provide a number of qualified airport managers.

An airport manager selected simply because he is an aviation enthusiast or a qualified pilot will not develop the operation of the airport as well as a businessman who has a knowledge of aviation. A conclusion which is rapidly proving itself is that airport management on a business basis is the only satisfactory method.

After the commission has selected and employed the manager, it should strictly define his authority and duties, giving him the authority to make leases and contracts with all airport users subject to their approval. The commission should then co-operate with the manager to aid in developing the maximum usage of the airport and obtaining its peak revenue. When such a procedure is followed, the airport will offer more service and convenience to the community and public support for its expansion will be assured.

But in either case, if the airport is to be expanded or a new one proposed the commission should take immediate steps to obtain public support and arrive at their airport program. Only by this means can each community guarantee itself a position in the aviation future of this nation.

NEXT MONTH: *How to tailor airport planning to community needs—gathering economic data, analysis of data, determining needs, financial planning, design for revenue.*

★ ★ ★

Study Of Small Town Survey Reveals Plane Ownership Data

By E. H. PICKERING
Director, Air Market Data Service

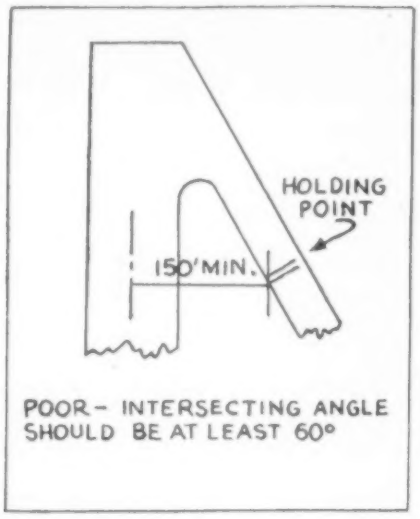
SMALL communities in the Southwest have far more aircraft owners in relation to population than larger communities or than the national average. A survey conducted by the Fourth Region office of the Civil Aeronautics Administration, under direction of C. L. Willis, Jr., of the Airport Section, shows that for thirteen small communities averaging 5,260 persons in population there are 427 persons per aircraft owned, as against a national average of 6,100 persons per aircraft owned.

Of 101 privately-owned planes covered in the survey, small business proprietors own twenty-seven, as many are owned by persons engaged in aviation by occupation. Other owners are listed by occupations as follows: Petroleum industry twelve, agriculture ten, miscellaneous seven, professional five, non-aviation mechanics four, education two, housewives two, flying club two, public official one, clerk one, and engineer one. Nearly 30 per cent of the owners earn $4,000 to $7,500 annually, and they use aircraft mostly for pleasure flying. Twenty-two per cent indicate they use planes for business and part for pleasure. Ownership by income brackets is as follows: Over $25,000 annually, six; $7,500 to $25,000, twenty-four; $4,000 to $7,500, thirty; $3,000 to $4,000, thirteen; under $3,000, nine, and not indicated, nineteen.

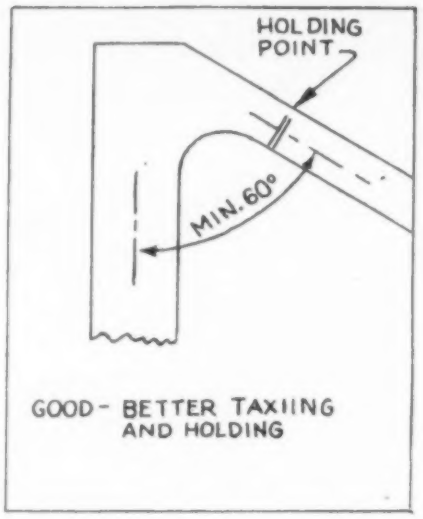
Most of the planes are flown 150 to 225 hours annually. Hours flown annually, by brackets, are as follows: Under eighty-five hours, eight; 85 to 150, eighteen; 150 to 225, thirty-three; 225 to 450, twelve; 450 to 800, nine; 800 to 1,500, five; over 1,500, two; not indicated, fourteen.

A statistical analysis of the survey's findings by income groups is contained in the following table:

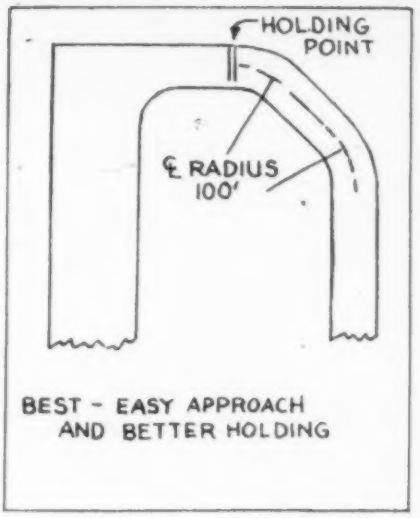
	Over $25,000	$7,500 to $25,000	$4,000 to $7,500	$3,000 to $4,000	Under $3,000
Aircraft	6	26	28	15	8
Single owners	6	20	24	9	6
Two owners	—	2	3	4	1
Three owners	—	—	—	1	1
Four owners	—	—	1	—	—
Eight owners	—	—	—	1	—
Owners in aviation industry	—	1	9	3	3
Aircraft used for business	2	4	4	5	2
Aircraft used for pleasure	1	5	13	3	5
Aircraft used for both	3	6	8	3	—
Building up time	—	6	3	3	1
Average annual cost	$3,100	$1,035	$838	$1,016	$871
Average annual hours	320	238	180	299	258
Average cost per hour	$9.69	$4.39	$4.65	$3.39	$3.37
Aircraft under 80-hp.	2	19	19	13	8
Aircraft over 80-hp.	4	7	9	2	0



POOR - INTERSECTING ANGLE SHOULD BE AT LEAST 60°



GOOD - BETTER TAXIING AND HOLDING



BEST - EASY APPROACH AND BETTER HOLDING

Taxiway Facilities for Better Ground Handling

The airport that plans facilities to save airline ground handling expense should receive more consideration in landing fee payments.

By JOHN H. FREDERICK

IT has been estimated that the airlines make between 500,000 and 750,000 landings and take-offs each year. These airport users are, therefore, vitally interested in the length of runways, position of taxiways, approaches and other factors of airport design. If well planned these features can save money. If poorly planned they cause excessive wear and tear on flying equipment that adds materially to airline maintenance and overhaul costs.

Most of the airports used by the airlines have an average runway length of about 3,800 feet and a runway width of 150 feet. In designing the taxiways, too few airports have given consideration to their position with respect to the runway length or the maneuvering of planes on the ground. The inevitable effect of this lack of planning is that when a transport lands, it rolls past the turn-off point on the landing runway or must be sharply braked to slow it in time to make the turn-off. At most airports when a plane over-rolls a taxiway the pilot must bring it to a stop and by using alternate applications of power on his engines and severe braking, turn it through 180 degrees. The 150-foot runway width makes it necessary to turn sharply with a consequent severe torque action on the rubber of the inboard wheel.

Another result of airport planning without consideration of the possible use to which its facilities may be put is seen in the fact that the average taxiway or runway intersection has rather short radii of turns. Taxiways, moreover, are rarely over 100 feet wide. This means a pilot of a large plane must bring it almost to a stop before he can negotiate the turn-off from the runway and then go through a series of irregular applications of single-engine power to proceed along on a relatively narrow taxiway.

Another criticism sometimes made by airline people is that there are too few airports with adequate identification and guide lights for taxiways and runway intersections. Lacking such lights the pilot over-rolls at night with resultant excessive braking and extra use of engines while landing and taxiing to the ramps.

The defects mentioned here work both ways, both on landings and take-offs. The additional engine wear and extra gasoline needed for engines in ground maneuvers and the tremendous wear on brakes and tires caused by short stops and sharp turns on the hundreds of thousands of landings and take-offs cost the airlines no small amount each year.

From the airport management standpoint poorly located turn-offs and taxiways have another result. They seriously hamper the use of an airport because of the added length of time it takes a plane to clear a runway for the next landing or take-off. Delay in landing and taking off due to poor ground facilities causes unnecessary waiting both in the air and on the ground. In each case the aircraft has its engines running and the expense involved is considerable.

It would certainly be worthwhile for airport managers to study their own conditions with the idea of bringing about the improved situation illustrated on this page. Ground maneuvers will be considered more important by airlines and airport managers as time goes on. If each landing and take-off requires a mile of ground travel, this adds up to 750,000 miles per year. Anything that can be done to reduce such a total means money in the airlines' pockets, and money for the airport, too, because if airport fees are under consideration the airport with the best arranged facilities, with the least waste of time on the ground because of poor planning, has the best chance to get the best landing fees. Airlines are watching the added costs that ill-planned facilities cause them. They want design corrections on the taxiways, runway widths, turn-offs, lengths and lighting facilities.

If the airlines are willing to pay their proportionate share of the improved facilities it is smart airport management to go along with them. This does not mean that the airlines need be called upon for large funds for improvements; but it does mean that when improvements that save the airlines money are made they should be reflected in the landing fees paid.

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Success Through Service

By HARRIET LOUISE URBAN

TWO newcomers to aviation are winning flying friends and influencing people to take up flying at Fort Worth, where their ideas of airport management for the private flier are paying dividends. They are E. F. (Buck) Russell, cafe, night club and tourist court operator, and Stoney Henry, former oil and insurance man. Russell owns the airport, Russell Field (formerly Singleton Field) and Henry is airport manager.

Russell Field is an example of what can be accomplished for private flying through alert management and friendly, thorough service. It is neither large nor fancy, but all of its facilities are used to the fullest advantage. Located six miles south of town on Highway 1, it has no obstructions barring its four turf runways, of 3,000, 1,900, 2,200 and 2,100 feet in length.

The grounds are well arranged with plenty of room for expansion and good housekeeping is evidenced as you turn in the drive. Gravel is where gravel belongs, no paper litters the grounds and everything is in its place. To the north of the parking area (close to the flight line) is the individual hangar area. Ten T hangars are presently used and there is a 12-unit hangar with numbered stalls. To the south of the administration building are the tidy shop and another maintenance hangar.

Hangar flying is centered on the administration building's screened porch, furnished with comfortable chairs and scatter benches. In the lobby is an attractive counter with showcase, enclosing the office. A complete line of accessories is carried, and in lieu of a coffee shop there are sandwiches, cold drinks and candy for sale. Behind the counter is the "office"—the desk.

Three blocks from the field is a tourist court operated by Russell. This provides nearby and comfortable overnight accommodations for transient pilots. Plans call for a new tourist court to be erected in conjunction with or near a new administration building which is being designed. The airport's service car provides transportation to and from the courts, and also meets the nearby city bus as a service to students.

Maintenance and aircraft repairs are directed by Roy Crow, formerly sub-assembly general foreman for Globe Aircraft. Each ship at Russell Field is kept in constant repair, being pulled into the shop as soon as work is needed and returned to operation as quickly as possible. To a lot of pilots it is quite a shock to be asked if there is anything out of order on the plane, but Russell and Henry aren't pilots and they don't want anything to slip merely because they couldn't catch it themselves.

Russell Field has storage space now for thirty-two planes, including space in its maintenance hangar, and in the next year seventy additional T hangars will be erected. The T hangars are fireproof in their sheet iron construction and were one of the biggest growing pains the operator encountered. After much difficulty and fuss with a contractor, Russell and his aides built them themselves. Storage space rents for $15 monthly, and an individual can erect his own hangar on space costing $5 monthly ground rent.

Cement tie-downs are provided on the outside. Because an idle airplane at the gas pit is a nuisance, each ship is fueled as promptly as possible and then moved back to the parking line. To keep spectators out of the props a borderline is clearly indicated. Only competent persons are allowed to pull the props through. A stock of pillows and cushions is kept for students and airplane users, and there are plenty of chocks.

Emphasis is placed on the part the tailwheel plays in turning the airplane on the ground and how to taxi properly. Special taxiways are indicated with chalk lines. Turf runways at Russell Field probably will be replaced with asphalt during the coming year to make the field suitable for all-weather operations.

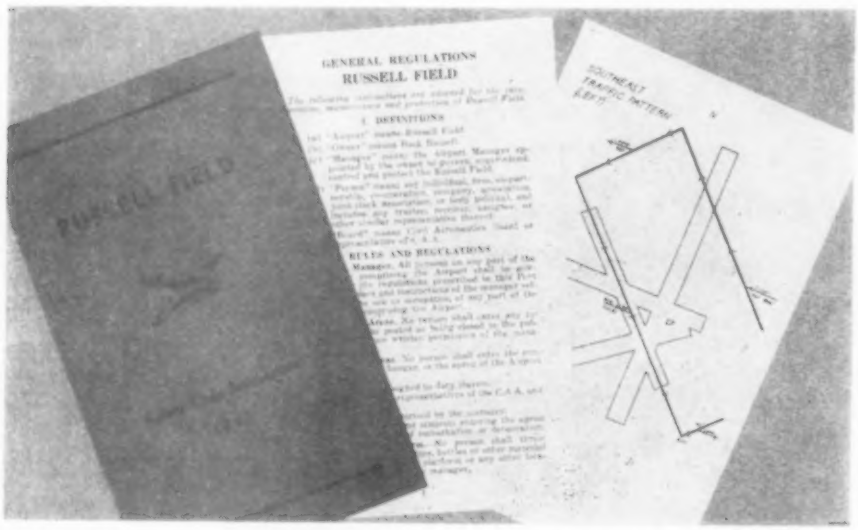
Flight instruction policies not required and often overlooked by many operators are used at Russell. Waiting time for students is narrowed appreciably by carefully scheduled appointments and efforts to reduce wasted motion around the planes. Instructors do their ground talks before going to the ship and solo students are requested to watch their time in the air so those waiting can take off at the appointed time. A file is kept of student instruction records, filled out by instructors and deposited with the office manager. Terry Clemes is chief flight and ground school instructor. Rates for plane rentals at Russell are $7 dual and $6 solo for 65-hp. trainers while the PT'S (Ryan, Fairchild and Waco) draw $15 dual and $14 solo.

All students and pilots using Russell Field are given a compact booklet containing a well-planned set of field rules and traffic pattern diagrams according to wind direction.

Russell has introduced two innovations to stimulate business at the airport. He offers a flight scholarship to the senior having the outstanding scholastic record at a nearby high school. In addition, Russell offers special instruction rates to soldiers at nearby Fort Worth Army Air Field who might desire flight training as an aid in finding civilian employment. Another innovation is a contest conducted at the airport on the first Sunday of every month for control-line gas model airplanes. Fifteen hundred persons attended the first such contest, for which a prize of $100 in cash or flying time was offered.

Successful development of Buck Russell's ideas has led to plans for impressive improvements to the facilities at the airport. A new $20,000 administration building is planned, and will be air-conditioned, with a comfortable lounge for the public. It will also have classrooms, a coffee

(Continued on page 70)



Russell Field patrons are provided handy little pamphlets containing up-to-date field rules and traffic pattern diagrams.

Cities Seek Comeback After Senate Channels S-2 Funds to States

Passage by the Senate of the McCarran Bill providing $75,000,000 Federal aid annually for five years for a national airport construction program involved a victory for the states, as an amendment to S-2 calls for all Federal aid funds to be channeled through state aviation agencies rather than through municipalities.

S-2 now awaits action by the House, where Rep. Clarence F. Lea's HR-3615 remains to be considered. Municipalities will make a strong bid for consideration in the House. The Lea Bill would provide $65,000,000 annually in Federal funds but Rep. Jennings Randolph will seek to raise this to $100,000,000. The Senate reduced McCarran's provision for that amount before passing S-2, and additional amendments (1) deleted CAA authority to condemn land for airport projects and (2) revised an original provision requiring CAA to obtain Congressional approval on all airport projects so as to require approval only on Class 4 and larger airports.

McCarran's legislation adopted by the Senate would become effective on July 1, 1946, if enacted into law.

Beverly Howard Wins Haire Award; Others Announced by NAA

Beverly Howard of Orangeburg, S. C., president of Hawthorne Flying Service and Hawthorne School of Aeronautics, was announced the winner of the first prize of $5,000 in a national competition to stimulate the development of landing facilities. The award was presented by the National Aeronautic Association which sponsored and administered the competition for Andrew J. Haire, New York publisher. Second place prize of $1,000 was won by Horner & Shifrin and Smith, Hinchman & Grylls, Inc., Detroit, engineering consultants. Third prize of $500 was won by the Bradford, Pa., aviation commission. Ten awards of $100 each were made to Grattan English, San Francisco; R. E. Flynn, Miami, Fla.; R. J. Reed and E. V. Fryhoff, Eldon, Mo.; Alfred B. Bennett, Middletown, Ohio; Everett V. Hogan, Mitchell, Neb.; Ralph T. Zook, Bradford, Pa.; Francis R. Meisch, St. Paul, Minn.; Hart Bowman, Dallas, Texas; M. R. Blattner, Dayton, Ohio, and Mrs. T. White, Avalon, Santa Catalina Island, California. The awards were designed "to encourage ingenuity and initiative."

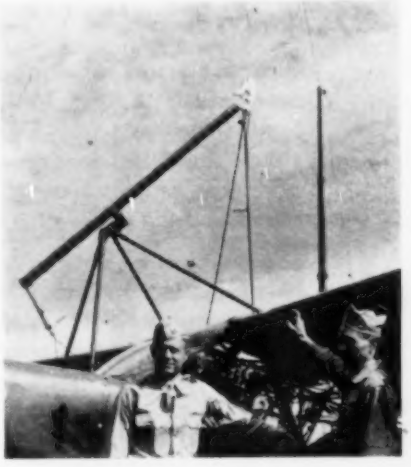
Firm Plans Ann Arbor Expansion, Adds to Staff

Giffels & Vallet, Inc., Detroit, have been commissioned to study, plan and design the expansion of the Ann Arbor City airport, according to M. W. Cochran, chief airport engineer of the company.

Liaison plane engages 6-ft. nylon loop to land on AAF's cable rig.

Portable Cable Rig for Landing, Launching Lightplanes

Invented by Capt. James H. Brodie of New Orleans, a novel system has been developed and used by the AAF Air Technical Service Command to land and launch lightplanes with a steel cable and nylon harness suspended from a portable rig. The apparatus consists of a loop of nylon suspended from a taught, horizontal cable. In landing, the airplane snags the loop with an overhead hook, and a friction brake gradually halts it, while in taking off the friction brake holds the craft until sufficient power is revved up, then allows the plane to "taxi" down the cable until the pilot yanks a lanyard releasing the hook from a stirrup attached to the nylon loop. The main cable is supported by four 65-ft. masts. All equipment and a nine-man crew can be carried in cargo planes and landed by parachute.



Hook carried on plane has lanyard for take-off release.

Cable arrangement provides "open" approach with 65-ft. mast on sideline. Plane at right has stopped landing "slide" (note trailing secondary cable). (AAF Photos.)

Photo shows paint treated with Paint-Gon ready to be hosed off

Turco Chemists Present Paint-Gon with 3 Outstanding Advantages

1. REGARDLESS OF THE MATERIAL UNDER THE FINISH— new Turco Paint-Gon is safe and non-corrosive to all widely used metals and wood; will not attack aluminum, magnesium, steel, cadmium, iron, zinc, or galvanizing; nor will it warp or raise the grain of wood.

2. REGARDLESS OF THE TYPE OF FINISH—new Turco Paint-Gon is effective on all kinds of coating—paint, enamel, baked enamel, varnish, lacquer, automotive synthetic enamel, baked varnish, air dry synthetic enamel, and even such stubborn finishes as baked urea alkyd and through the action of the stripper alone without scraping, scrubbing or brushing.

3. REGARDLESS OF THE CONDITION OF THE FINISH— new Turco Paint-Gon swiftly removes unwanted finishes, regardless of their condition, regardless of the number of coats, whether the finish is baked on by blistering desert sun, or cracked, or pitted.

Paint-Gon is swift in its action, removing coatings in five to twenty minutes so that it may be flushed away, leaving no gummy adhesive residue or film.

Paint-Gon may be applied by brushing, scrubbing or spraying; spreads easily and uniformly; clings well to vertical surfaces. It is non-inflammable (and does not require use of inflammable, volatile solvents), is water removable, exceptionally free-rinsing. Product itself is stable, non-separating, has no tendency to congeal, causes no trouble in shipping, storing, or handling.

Phone your nearest Turco field representative, or write Turco today. Dept. SF-10

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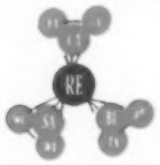

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Surface Chemistry is the scientific balance and application of these cleaning factors to a specific problem.

WA—Wetting Action
EA—Emulsifying Action
SV—Saponifying Value
SA—Solvent Action
CA—Colloidal Activity
WC—Water Conditioning
BI—Buffer Index
PH—Energy of Alkalinity
TA—Total Alkalinity
RE—Research and Experience, the combining factor that puts all the above elements into balance and to work on your specific problem.

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AIRPORT EQUIPMENT

Portable Flashing Beacon for Airports

Electronic Laboratories, Indianapolis, are manufacturing a lightweight, portable flashing beacon for identification signalling at military airports. It produces high intensity, short duration, intermittent, light flashes, and operates from 110-volt direct or alternating current, using a vibrator to convert to 2,000-volt direct current, producing the flashing light. Under normal conditions, the light is visible for at least twenty miles, producing thirty million candle power. The beacon is also a stand-by for large airports, and may be used by smaller ports that cannot afford the stationary rotating type beacon.

Portable 50-ft. Mast of Plywood

A newly designed and tested fifty-foot mast, the "Ham-Mast," is being manufactured by the Plymold Corporation, Lawrence, Mass. The new mast is designed for UHF and VHF and can be adapted for FM and television reception. It can be erected in fifteen minutes, with all hazards eliminated. It is suited for all weather conditions and will withstand wind velocities of 100 mph.; it is also lightweight, and can easily be moved from one place to another. The mast is nonmetallic, being constructed of wood. It is now in production and deliveries are being made.

THOS. D. BROAD
ARCHITECT
For Dallas Air Terminal
Love Field
Burt Bldg. DALLAS R-4768

Tie-Down Aid

Snap rings for mooring aircraft cut rope-tying time in half at Sacramento Air Technical Service Command. They afford more secure tie-down since all four ropes required tie through the ring, and enable speedier handling.

Portable Engine Pre-Oiler Unit

Pacific Airmotive Corporation is manufacturing a P O 125 aircraft engine pre-oiler and oil transfer unit. It is a rotary pump-vane type, with built-in by-pass valve and a pressure gauge mounted on pump. The storage tank has a capacity of 125 gallons, sufficent to pre-oil twenty-five aircraft engines. The pre-oiler is equipped with electric immersion heater (1,500 to 2,000 watt), temperature gauge and thermostat control. As an oil transfer unit, it will deliver oil at approximately three to five G. P. M., depending on the temperature of the oil.

Adams With McLaughlin-Carr

James W. Adams has been appointed chief engineer of the airport development work of McLaughlin-Carr Associates, an architectural, industrial and aeronautcial engineering, design and research firm in New York. Adams was formerly in charge of airport engineering, design, construction and maintenance for the Curtiss-Wright Corporation, and is considered one of the pioneers in airport development work.

Steele, Craig Join Airport Consultant Firm

Dudley M. Steele, who has resigned as general manager of Lockheed Air Terminal, and Robert Fenton Craig, consultant and professor of commercial aviation at University of Southern California, have become associated with Trumpis-Collier & Associates at 2511 Wilshire Blvd., Los Angeles. The firm will provide an airport consultation service for municipalities and private business groups. Both Steele and Craig have pioneered major developments and innovations in modern airport management and planning.

John H. Wilson in Chicago Operating Firm

John H. Wilson, formerly executive director of the National Aviation Trades Association, has been named vice president, secretary and general manager of the newly organized Central States Aviation, Inc., Sky Harbor, Chicago. The company has inaugurated charter service for business men, sportsmen, and for emergency travel. Two of four Cessnas bought by the company have been converted and are now in service. Other principals of the corporation are O. A. Helsing, president; Herman Krissman, treasurer; Harold C. Mattes and William Turgeon, partners in the operation of Sky Harbor airport.

WANTED

Fixed base operator on municipal airport serving 150,000 population, 2 paved and lighted runways, steel-concrete hangar 120x125, shop and office 25x125; sale of gasoline, student instruction, passenger hops, charter flights, hangar rentals and repair of aircraft are included in the franchise. If interested, address Chairman, Tri-City Airport Commission, P. O. Box 419, Johnson City, Tennessee, giving references and experience. Replies must be received by Nov. 1, 1945.

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EXPORT AGENT: Russell D. Heath, Room 605, 125 Barclay St., New York 7, N. Y.
BRANCH OFFICES: 1314 Neils Esperson Bldg., Houston 2, Texas; P. O. Box 609, Cleveland, Miss.; 106 Burt Building, Dallas 1, Texas.
REPRESENTATIVES: Kansas City, Amarillo, Odessa, Oklahoma City, Wichita.

Cleveland Leads Busiest U. S. Airports

BUSIEST airports in the nation during August were Cleveland, Dallas and Detroit, according to Army figures listing take-offs and landings as recorded by control towers. Here is how the first ten airports rank, according to figures obtained by SOUTHERN FLIGHT.

City	Take-offs and Landings August, 1945	Hourly Average
1. Cleveland	33,965	47
2. Dallas	25,686	36
3. Detroit	25,459	35
4. El Paso	23,124	32
5. Atlanta	21,527	30
6. Phoenix	20,786	29
7. Memphis	20,101	28
8. Kansas City	20,028	28
9. Miami	18,537	26
10. Long Beach	17,149	24

National Airport at Washington, with 14,683; Chicago with 16,081, LaGuardia with 13,434 and San Francisco with 8,502 for the month of August were far down the list.

As a rule, most of the take-offs and landings listed represent Army traffic. An example is shown by a breakdown of the figure given for Dallas' Love Field, on which is located an important base of the Air Transport Command's ferrying division. Love Field's total of 25,686 operations during the month included 14,668 local Army schedules, 5,325 transient Army, 194 transient Navy, 4,251 air carrier, 523 itinerant civilian, and 725 local civilian.

June was the peak month and traffic ebbed lowest in February.

Swedish Airport Engineers Studying U. S. Projects

Two Swedish engineers who will direct the construction of a new international airport at Stockholm were on a tour of new American airports last month, conducted by representatives from the Civil Aeronautics Administration. The engineers, Gunnar Jonssen, general manager for the construction of the Stockholm airport, and Sture Jakobson, Jonssen's assistant, were studying airport plans and construction machinery for possible application to the Stockholm airport.

Airport Planning On Arizona Conference Agenda

The Tucson Chamber of Commerce will sponsor the first statewide aviation conference held in Arizona on November 15 and 16. The conference is to obtain the latest information in regard to airports, airport management, private fliers' problems, commercial airlines development, unconventional aircraft and new propulsion methods. Governor Sidney P. Osborn of Arizona will give the opening and welcoming address; Monte Mansfield, president of the Tucson Chamber of Commerce, will preside. R. F. W. Schmidt, superintendent of airports service, Civil Aeronautics Administration, Region 9, will deliver the opening talk on "Where Do We Go From Here?" Attention will be given to the problems of the private flier, and the public is invited.

Fees and Changes for Idlewild Listed

A schedule of fees for New York's Idlewild airport has been announced, indicating a total revenue of $3,005,300 for the fiscal year beginning July 1, 1949. Broken down, the revenue includes: Scheduled fees, $462,700; ground transportation of passengers, $277,600; observation platform, $100,000; rentals of hangar site areas, $150,000; rental of arcade areas, $855,000; rental space in terminal building, 625,000; parking, $100,000; aviation fuel vending privilege, $375,000, and miscellaneous items, $60,000.

Revenue will come chiefly from the airlines. For planes with gross weight of less than 32,000 pounds, landing fees will begin at $200 each per month for the first, second and third schedules; fourth through seventh $136.36; eighth through twelfth, $68.18, and all thereafter, $36.36 each per month. An additional charge of 91 cents per 1,000 pounds will be assessed heavier airplanes.

Rentals of ground space include $200 per year per acre for hangar sites; $200 per year per acre for fuel storage space; $1.50 per square foot per year will be charged for temporary space. Annual rentals in the terminal will be $2.50 per sq. ft., ground floor; $5 per sq. ft., first floor; $3 per sq. ft., second and third floors; and $2 per sq. ft., fourth floor. Carriers are to pay a proportionate share of the cost of control tower personnel furnished by the city, and 10 per cent on gross receipts derived by the airline from ground transportation to and from the terminal.

SUCCESS THROUGH SERVICE

(Continued from page 66)

shop, a parts department and above it will be a control tower. The aircraft repair shop is to be enlarged.

Everyone from Russell down to Slim, the porter, welcomes suggestions and criticism which might lead to improved service. Their many friends among ranchers, perfume salesmen, airline pilots, engineers, clerks and school students are growing in number, and business is steadily expanding.

★ ★ ★

St. Louis Airpark Demonstration Postponed

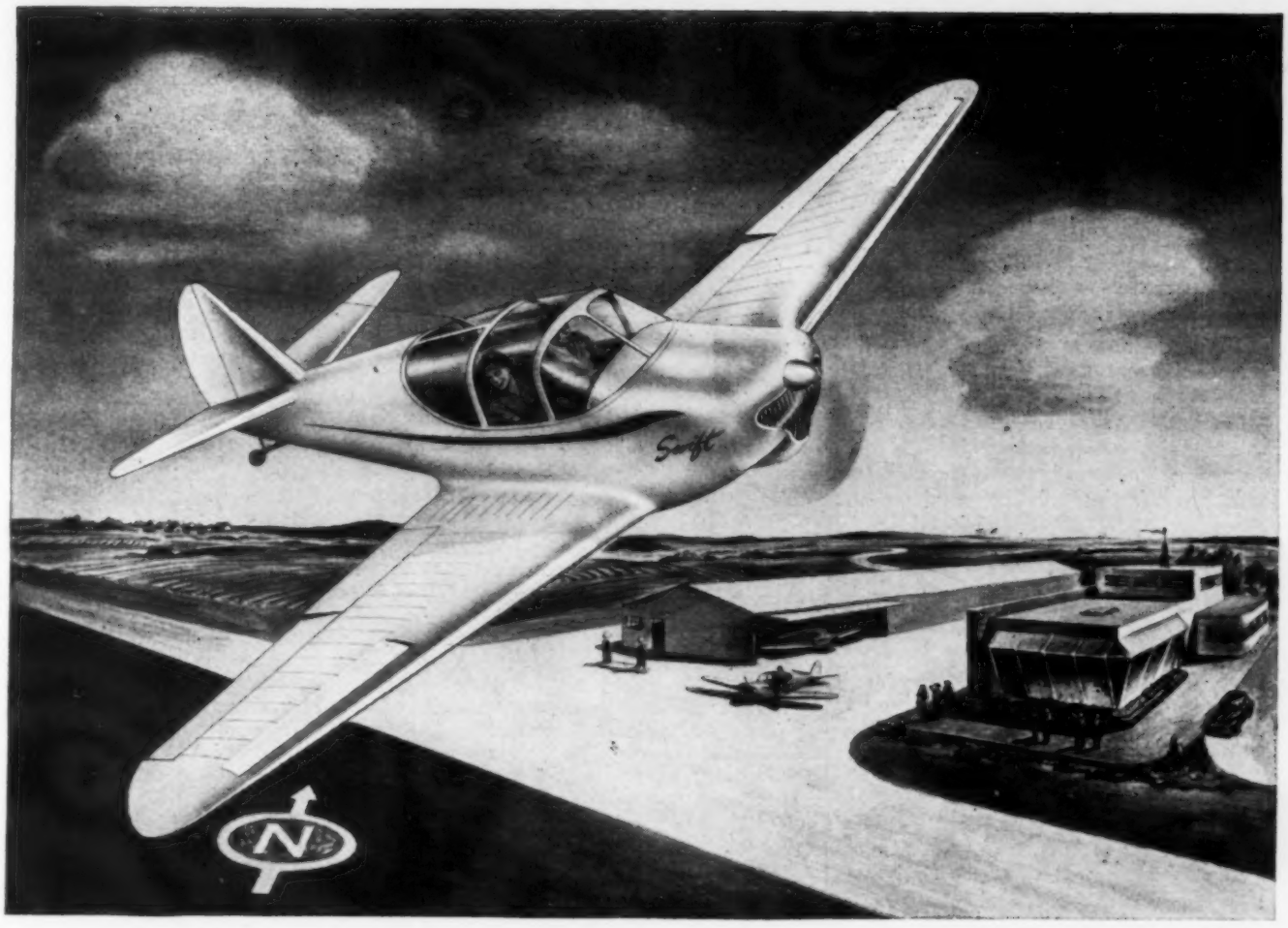
The St. Louis Airpark demonstration has been postponed until next year because of reconversion, during which manufacturers have been unable to get their merchandise for exhibition. The demonstration was originally scheduled for October 1 to November 30. The eight aircraft service operators in the St. Louis area who organized a non-profit corporation to conduct the airpark voted to continue the operation next spring. Members of the committee are Murray N. Whitehead, chairman; W. F. Scott, Jr., treasurer; C. R. Mooney, secretary; Clyde E. Brayton, A. A. Hazell, H. F. Heideman, David W. Kratz, Oliver L. Parks and E. H. Woestendiek.

Doc Maher Lecturing to Business, School Groups

Frank (Doc) Maher, who resigned as assistant to Oliver L. Parks, has begun a national speaking tour, having contracted to make 400 talks during the next year before business organizations and high schools. In discussions before the business groups, he delivers 90-minute talks on "How To Plan and Merchandise an Airpark for Your Community." His subject for high school groups is "Career Opportunities in Aviation." Maher's tour will take him through Ohio, New York, Illinois, Connecticut, Missouri, Florida and Texas.

CAA Aiding Disposal of Surplus Airports

The Civil Aeronautics Administration will aid the Surplus Property Board in the disposal of surplus Army airports. It will give technical assistance, and send field personnel in connection with negotiations with cities and counties. At present, George M. Borsari, CAA, is handling disposal arrangements. He is writing regulations for disposal and studying fields already declared surplus.



Enjoy new, big plane features and safety in your thrifty ALL-METAL Swift

Yes, the new *Swift* is designed and built to give you the features of safety, performance, comfort, and economy that you want and need in your personal airplane. . . .

ALL METAL CONSTRUCTION — For safety, long-lasting good looks, easy servicing and low upkeep.

85 OR 125-HP. ENGINE — Plenty of power for speed and maneuverability, and safety in rough weather flying.

30-GALLON GAS CAPACITY — Plenty of fuel for 600-mile cruising range plus safety reserve.

100-lb. BAGGAGE ALLOWANCE — Plenty for generous luggage requirements or sports equipment.

ELECTRIC-HYDRAULIC RETRACTABLE LANDING GEAR —for better performance, smarter appearance . . . engineered for safety and easy, simple operation. Extra wide (9 ft. 9 in.) tread and well forward position gives positive ground stability. Big, sturdy oleo-spring struts and 6.00 x 6 tires give soft landings, easy ground handling and taxiing.

SLOTTED-TYPE WING FLAPS AND N.A.C.A. DESIGN WING SLOTS — for safe, slow, easily controlled landings and quick, short take-offs.

BIG DE LUXE CABIN — Plenty of room for two six-footers . . . insulated and ventilated . . . soft, deep airfoam leatherette cushions . . . ultra modern trim and appointments.

With all its big-plane features and performance the *Swift* is a thrifty ship to own and fly . . . moderately priced in volume production. Ask your friendly *Swift* dealer to notify you when his first *Swifts* arrive. Write today for his name and address.

Swift Flying means Profitable Flying

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☐ Free Illustrated Booklet

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LIAISON PILOTS

(Continued from page 40)

broken." Only he doesn't say "back."

Lower Costs Needed

Major Benjamin B. Elliott, formerly with the U. S. postal service at Suffolk, Va., is now a Field Artillery officer with liaison pilot wings who flies the oldest L-5 in the MTO (a plane, incidentally, that has outlasted three engines) and is one of the most conservative and considerate pilots in Italy. I flew with him from an airport near Verona to the AAF Depot Unit No. 3 landing strip in the Bergamo area. He tucked me in the rear seat of his Sentinel and briefed me so thoroughly on how to bail out of an L-5 that I'll always remember him as "The Gentleman from Verona."

Major Elliott says the bone he finds to pick with civilian use of lightplanes is the expense. "Everything about them is too expensive—the initial cost, the overhauls, engine changes, incidental ground transportation—everything is too expensive.

He would like to see these features incorporated in lightplanes:

1. Wing slots.
2. Flaps.
3. Soundproofing.

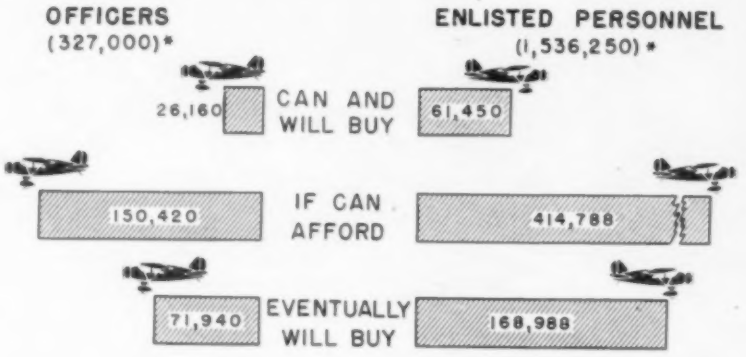
Sgt. S. Joseph Otto, who chalked up six years' work in a variety of supervisory capacities with Republic Aviation's Farmingdale and Indiana divisions, had a private license with over 200 hours logged when he came into the Army. He is also a licensed A & E mechanic. When he returns to Civvy Street, he hopes to be a lightplane distributor.

Sergeant Otto lists these points as adding up to his ideal postwar lightplane:

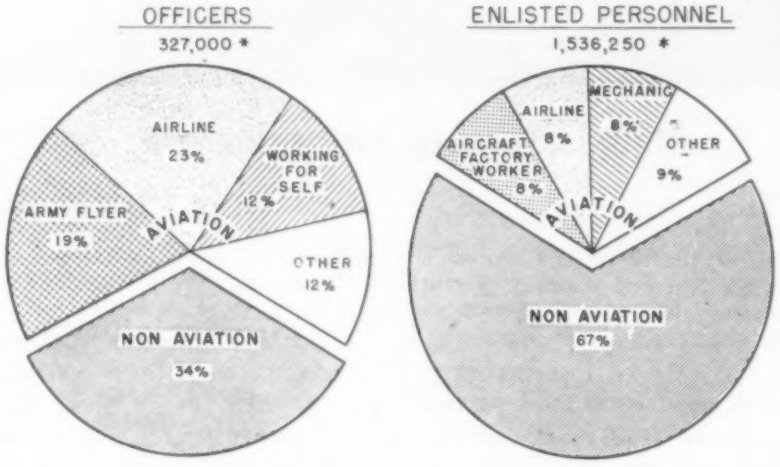
1. Three or four seats.

Sergeant S. Joseph Otto likes Seabee amphibian.

Aviation Intentions of AAF Men



OF the Army Air Forces' 327,000 officers and 1,536,250 enlisted men, approximately 441,000 expected to seek jobs in aviation and 87,000 intend to buy personal airplanes, according to a survey by the Civil Aeronautics Administration in co-operation with the AAF. Only 1,278 officers and 2,215 enlisted men, all of them returnees, were questioned about their intentions, but the figures quoted were obtained by translating their responses into terms of the total AAF personnel. The two accompanying charts detail the information obtained by CAA. Incidentally, very few, only about one per cent, of AAF men look favorably on the flight instructor's job. A detailed analysis of the survey is being prepared by CAA.



*SOURCE: AIRCRAFT YEAR BOOK 1945

2. Wide landing gear for landing stability.
3. Wing slots.
4. An engine of 75 to 125 horsepower.
5. Cost: Under $4,000.
6. An amphibian plane such as or similar to the Seabee.

More Airports

Lt. Virgil Sorensen, 24-year-old Viborg, South Dakotan, who worked for Lockheed Aircraft, Burbank, Calif., before he joined the AAF, would like to see more small airports built closer to American cities. If he buys any plane it will be a three- or four-passenger biplane similar to the Beechcraft D-17.

Flight Officer Patrick L. Baxter, 23, Cleburne, Texas, who was a student at the Universtiy of Texas before he began flying the Army way, sees a great reduction in upkeep costs for small-plane owners in the immediate future. For one thing, he says, licensed mechanics will be a dime a dozen in a short time, what with all Army-trained aviation mechanics getting the nod from the CAA.

Flight Officer Baxter recommends the following for the ideal lightplane:

1. Ball-bank indicator.
2. A four-seat job.

(Continued on page 84)

If the "Age of Flight—1950 Edition"—the complete history of Aviation—were ever written, the name Shell would appear consistently as a leader in Aviation Fuel development.

IN THE TEST TUBES OF TODAY —TOMORROW'S AVIATION HISTORY

Habitually, history repeats itself. Factual data existent today lead to clearcut conclusions on the relationship of fuels to the planes of tomorrow. For example . . .

Today's Fuel in Yesterday's Plane

Not good! A waste of precious high octane components in old-time "low compression" engines . . .

Yesterday's Fuel in Today's Plane

That's bad too! Modern high compression engines would break down with old-time low-octane fuel . . .

Today's Fuel in Today's Plane

Fuel scientists keeping pace with plane designers. Maximum efficiency from lighter engines using more powerful fuel . . .

Tomorrow's Fuel in Tomorrow's Plane

Shell scientists are now exploring new ways to release undreamed-of-power . . . jet propulsion.

These basic conditions tell us that inevitably the planes and fuels of tomorrow must be "mated." *Finest of peacetime aviation products will come from the research which*:—

1. first gave the Army the "makings" of 100-octane Aviation Fuel
2. showed other refineries how to utilize Cumene—in time of emergency—to step up 100 octane production
3. developed pentane isomerization to give aviation fuel greater volume of anti-knock components
4. developed an "inhibitor" to protect aviation fuel from the blistering sun of foreign battlegrounds

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FINER FUELS FOR THE AGE OF FLIGHT

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You will find this brand of advanced thinking—backed by the full force of Shell facilities—reflected in the quality of AeroShell Lubricating Oils and Greases, and tomorrow's Shell Aviation Fuel.

THE Sky's the Limit

BY BILL GREEN

Are surplus combat planes really surplus? . . . America has never had enough defensive equipment in peacetime. . . . Let's store our surplus bombers and fighters. . . . We may need them. . . . Full employment by politics means regimentation.

Storage for Surplus Bombers

AS we live in Tulsa, where the government built one of its super airplane factories, operated during the war by Douglas, and as we are members of the Chamber of Commerce, we have listened for some months to plans involving the use of this tremendous factory when the government is through with it.

Many people "in the know" say it isn't practical for such factories to be divided into small units to house canning factories, or hay barns, or manufacturing plants, and their location is such that in most cases they would never have been normally chosen for such businesses anyway.

The other day en route to Denver we flew over several Army fields literally covered with expensive bombers such as won this war for us. These quarter-million-dollar aircraft are sitting out in the fields under the rains and blazing sunshine and subject occasionally to dust storms, howling gales, snows, sleets and hail storms.

In spite of all the prognostication to the contrary, we think these super bombers and Flying Fortresses may well serve us in any future war. At least, we certainly do not know of anything now that renders them obsolete. People have expected our Navy to become obsolete year after year and some have sought to disband it entirely. Nevertheless, the Navy has been a dominant factor in getting our men, our supplies, and equipment across and in fact, in winning the war. Some of the vessels that performed such yeoman duty were built when I was a child long before World War I. I well remember making a contribution to the silver service on one of the old battleships still fighting in World War II. It may live to fight in World War III, which as sure as we are alive is bound to come unless men greatly change their attitudes and their standards of honesty and fair play. Rifles made for World War I were still usable in World War II, as was the ammunition.

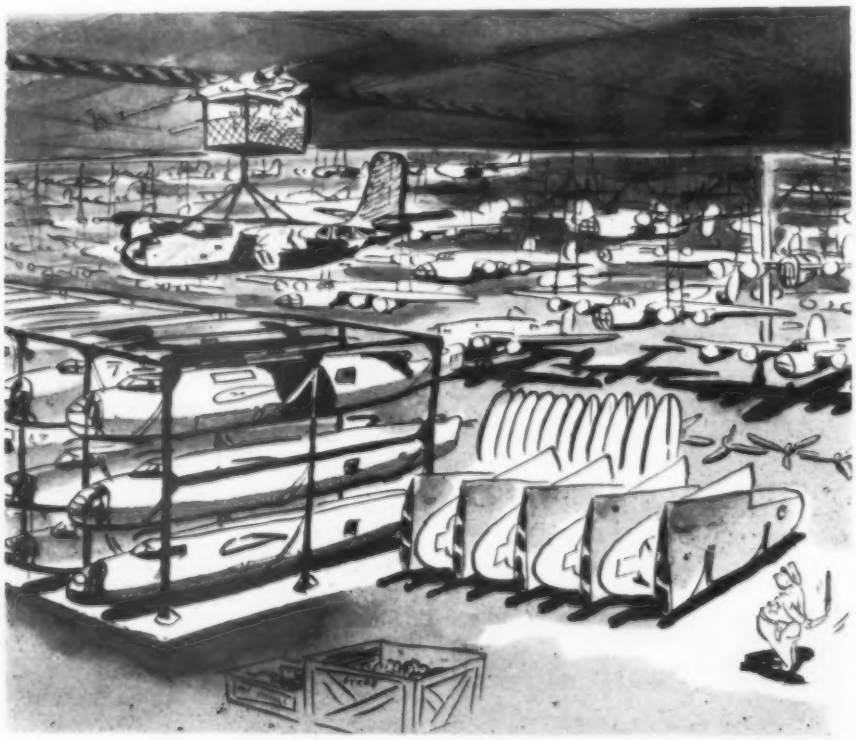
We believe that aircraft made at the end of World War II of the finest materials and of the latest design will, without much modification, be useful in World War III, or at least in the interim period.

This country has never had enough defensive equipment and has no surplus of such equipment now. This defensive equipment, already paid for and at least in a form more useful than for other purposes, should be hoarded, carefully guarded and preserved.

Our suggestion is that each one of these "impractical" surplus aircraft plants be rigged up to take fuselages row on row and stacked clear to the ceiling with the more perishable parts removed and properly stored adjacent to the aircraft. These plants already have traveling cranes and conveyor systems, and with proper storage methods they could be removed on a moment's notice in case of future emergency. No modification of the buildings would be necessary and no destruction of the facilities would take place. A minimum of personnel would be required to perform this work and to maintain and guard the plants.

The National Guard, the Air Force Reserve and the Civil Air Patrol could have some of these aircraft issued to them from time to time and could have replacements issued to them for many years without exhausting this tremendous supply. We think this would be far better than the plans we have heard rumored, namely, that these aircraft would be beaten up as junk, remelted, and made into kitchen ware.

This is the most fantastically foolish notion that we have ever heard expressed and we believe there are some people in the American government who will undoubtedly attempt to carry it out, since they have used no better judgment than this in many of the other fantastic schemes they have



"Surplus aircraft plants can be rigged up to take fuselages row on row, with the more perishable parts removed and properly stored."

forced upon the American people in the last fourteen years.

At a time when we are attempting to provide greater employment for the greatest number of people and when aluminum plants all over the country have a capacity far in excess of anything required for peacetimes, when miners, transportation and other agencies all need business, we consider it unwise to be tearing up something we have already built, selling it for junk and actually getting an inferior product from it in the final analysis.

After the last war, we sank some of our ships in a frenzy of international good fellowship. Not many people deliberately attack Joe Louis or Jack Dempsey; they won't deliberately attack us if we keep ourselves strong. Let us preserve these aircraft and guard our national defense. The next few years may be the most critical years of our national history.

★ ★ ★

Debunking the Politicians

We quote herewith a letter received from a friend who, because of his position, wishes to remain anonymous. His ideas make worthwhile reading for every American. We have been handed all sorts of panaceas and cure-alls by our labor leaders and part of our administrators in Washington. It may not be good courtesy to look a gift horse in the mouth, but it frequently is good economics. Here's what we mean:

"In studying postwar problems of so-called 'full employment', by which is probably meant a continuation of the frenzied wartime labor situation, with alternative job opportunities, tremendous turnover, and relatively low production per worker, with most people just one degree removed from nervous prostration, the Senate Banking and Currency Subcommittee has just concluded consideration of the Murray-Wagner Bill, in which it listened to an array of politicians, labor leaders, and an occasional scared business man, nearly all of whom endorsed the slogan but shied away from the implications involved in this dangerous innovation in our national life.

"By means of this apparently innocent and laudable slogan, 'full employment', the authors and supporters of this measure are preparing the nation for a perpetually unbalanced budget, a continuation of excessively high taxes (but never quite high enough to assure a solvent government), an inquisitorial system the like of which was never seen outside the boundaries of our late enemies, and a continuation and extension of bureaucratic controls over our national economy.

"Consider for a moment the statistical feat implied in this measure. In order to provide alternative job opportunities to several million marginal workers, many of whom are not sure they want to work anyway, this law proposes that the government canvass the millions of business establishments in the nation to learn their plans for capital expenditure, number of employes, etc., during the subsequent year; canvass the forty-odd million families to obtain a mythical total of consumer expenditures and purchases in every line; and from all this and a great deal more, to chart the level of business, consumer purchases, capital outlays, savings, and employment by private industry, as a basis for a national budget that will tell Congress just exactly how many additional billions of dollars it must appropriate to provide job opportunities for the theoretical residium of unemployed.

"In short, this law blandly implied a detailed knowledge on the part of government of the subjective mental processes and half-formed plans of millions upon millions of people-employers, employes, and consumers alike—without which knowledge a national employment budget could not come within atom bomb range of hitting the mark.

"It is somewhat ironical to see organized labor, represented by Messrs. Green, Murray, John L. Lewis, et al., all of whom have consistently denied the accuracy of the cost of living indexes of the U. S. Bureau of Labor Statistics, arise before the committee and place such child-like faith in the ability of government bureaus to perform a statistical feat that would make a mere cost of living index look like a problem in first grade arithmetic.

"Statistically, the U. S. Government hardly knows the State of Oklahoma exists. For example, our coal production figures are combined with that of Arkansas, which prevents either state from enjoying their beneficial use. The Bureau of Labor Statistics does not have a single city in Oklahoma included in its index of living costs, and when asked to correct this situation replied that appropriations were insufficient. When Secretary of Agriculture Anderson was here in August, 1945, for conferences with Oklahoma cattlemen on the problem of finding protein feeds to carry our large herds through the winter, the greatest handicap in reaching decisions was lack of reliable information from the Department of Agricultural Economics. Five years after the 1940 Census was taken, the 4th Series on Population is just now being issued.

"The Government, having largely failed to supply the statistical data which the individual businessman needs, the Murray-Wagner Bill now proposes that the obligation be shifted to the individual to furnish the government the data it would need in order to assume the dominating role in the national economy. Congress and the people are now asked with a straight face to believe that our gov-

(Continued on page 78)

Makers of Precision small parts for the Aviation Industry

★ ABILITY ★ PRECISION ★ PRODUCTION

DOLAN AIRCRAFT MANUFACTURING COMPANY

DALLAS, TEXAS

Streamlined cowling, wheel pants and one-piece windshield on customized 85-hp. Silvaire.

PLUSH JOB SILVAIRE

AN interesting experiment in customizing a factory production light airplane has been conducted by Weatherly-Campbell Aircraft Company of Dallas, Luscombe distributors for Texas and Oklahoma. A late prewar Silvaire has been given more power, increased roominess, better visibility, and improved performance. The 75-hp. engine was replaced by an 85-hp. Continental with electric starter and motor-driven generator. Total increase in weight resulting from the changeover plus soundproofing and electrical system is just under 80 pounds. Savings in weight by use of lighter cowling, baffling, instrument panel, etc., bring the net additional weight down to about 50 pounds.

Improved performance resulting from the increased power upped the top speed to 125, with a cruising speed of between 110 and 115. A one-piece cowl, lighter in weight and containing a single grill opening, gives greater forward visibility from the cockpit while taxiing. Improved cooling also was attained.

Changes in the cabin include a one-piece windshield of formed plexiglass, the addition of two windows at the rear for greater visibility, lowering of the floor, relocation of the seat, lowering and moving forward of the instrument panel, crowning of the doors for greater seat width, and addition of a roomy baggage compartment accessible from cockpit. Minor refinements such as cabin lights, sliding windows, fiberglass soundproofing, and airfoam seats were included.

One-piece grill for 85-hp. engine gives better cooling.

Special instrument panel was moved forward and lowered.

Bendix Airport to Be Private Fliers' Portal to New York

Robinson Aviation, Inc., is establishing complete terminal facilities at Bendix Airport, Teterboro, N. J., for private fliers on a scale hitherto unavailable in the New York metropolitan area. Limited service will start in November. C. S. Robinson, president, said he has leased the former Fokker aircraft factory and a nearby hangar to provide heated storage space and well-equipped maintenance and repair shops. An operations building to be erected will provide a pilots' lounge, a restaurant and snack bar, and telephone and stenographic services for executives basing their planes there. Standby taxi service will eliminate ground transportation difficulties.

10 YEARS AGO in *Southern Flight*

ARTICLES: In an exclusive article, Brig. Gen. Frank M. Andrews, commander of the Army's GHQ Air Force, brought out that the air force had only 360 combat planes, most of which were obsolescent. Operating and maintenance funds were insufficient and personnel was a serious problem with insufficient pilots through limitation of funds. . . . The Mississippi Fuel Corporation used Challenger Robin planes to patrol its pipelines. . . . Over 600 students were enrolled in Florida's Emergency Relief Administration aviation training school, which provided instruction to youths and practical aviation instruction for business men. . . . Larry J. Fisher described how to utilize the airplane in aerial photography for additional income by concentrating on commercial, airport and city "shots".

EDITORIALS: Observance of Air Navigation Week provided a large-scale campaign advertising aviation progress and utilizing efforts and interests of aviation proponents. . . . U. S. planes regained world prestige through new international speed records. Brig. Gen. Frank M. Andrews averaged 165.4 mph. in a Martin B-12 bomber equipped with floats for a new seaplane record; Major Alexander P. de Seversky set a new amphibian mark of 230 mph. in one of his designs, and Howard Hughes, flying his special racer, took the landplane speed crown from M. Delmotte of France with a mark of 352 mph.

BRIEFS: Consolidated Aircraft Corporation dedicated its new factory at Lindbergh Field, Calif. . . . A Lufthansa mailplane was catapulted from a ship, cutting one day from ship's mail schedule. . . . Sixty-seven officers and cadets were graduated from the Air Corps Training Center at San Antonio. . . . Production began at the Rearwin Aircraft factory on two models.

PERSONALITIES: Al and Fred Key used planes to stimulate sales. . . . J. E. Wall and Clint W. March were officials of Tampa Aero Club. . . . Mae Haizlip was appointed traffic manager of Columbia Airlines. . . . Charles E. Beard was appointed general traffic manager for Braniff Airways. . . . Dudley M. Steele, of Richfield Oil Co., passed through Albuquerque on way to Cleveland and made arrangements for the refueling of Bill Ong in the Bendix race. . . . Louise Thaden, Little Rock, Nancy Harkness, Boston, and Helen McCloskey, Pittsburgh, were appointed air-marking pilots.

LOOKING ahead...

Southern Aircraft Corporation at Garland, Texas, contributed for Victory since 1941 the following aircraft components:

- Tail Gun Turret for B-24 Liberator
- Torpedo Bay Doors in Grumman Avenger
- Wing and Tail Assembly in Grumman Hellcat
- Wing and Tail Assembly in Grumman Tigercat and numerous other Southern designed and produced products.

Soon, Southern Aircraft will announce peacetime products for use by an America building for a sound economic future. Look for coming publicity on new and exciting post-war developments from . . .

Southern

AIRCRAFT CORPORATION

PLANT IN GARLAND, DALLAS COUNTY, TEXAS

AIRPLANE AND PARTS

RAFTSMEN
SINCE 1934

Yesterday — Skylark was devoted to warcraft parts built to the exacting standards that produced an invincible air armada.

Today — Skylark's skilled, experienced operators, precision facilities, and top-flight engineers are again available for the swift production of your work . . . built to your specifications, to assure you the leadership of unexcelled craftsmanship.

ENGINE MOUNT

PRECISION PLANT FACILITIES FOR AIRPLANE STRUCTURES and AIRPORT EQUIPMENT
MACHINING — FABRICATING

ENGINE LATHES: 5 machines, 120 hours per day, size 0 to 1¼" capacity; TURRET LATHES: 3 machines, 72 hours per day, size 0 to 1¼" capacity; MILLING MACHINES: 3 machines 72 hours per day; PUNCH PRESSES: 4 machines, 96 hours per day, 30 ton, 65 ton & 5 ton; SHAPER: 1 machine, 24 hours per day; BENCH DRILLS: RADIAL DRILLS: GANG DRILLS: 312 hours per day.

PROCESSING

MAGNETIC INSPECTION: 3 machines, 144 hours per day; AIR PAINTING ROOM & EQUIPMENT: 48 hours per day; METAL SPRAY: 48 hours per day; SAND BLASTING: 5 machines, 110 hours per day; ANODIZING: 1 machine, 24 hours per day; CADMIUM PLATING: 11 tanks, 5351 gallons, and 2 barrel plators; ZINC PLATING: 2 tanks, 2 barrel plators; COPPER PLATING: 1 tank, 2 barrel plators; CHROME: 2 tanks.

TUBE CUTTING, SHAPING, WELDING: STEEL TUBE STRUCTURES; Engine Mounts, Loading Platforms, Work Stands, Passenger Stairs, Etc.

NOTE: LOOK TO SKYCRAFT
Private Airplanes For Better Safer Air Transportation

SKYLARK
AIRPLANE & PARTS
CRAFTSMEN
SINCE 1934
Skylark Manufacturing Co., Inc., Venice, Calif.

CONSULT Skylark Engineers — WRITE NOW!
Build To Your Drawings And Specifications

LOGGING THE COAST

(Continued from page 24)

pilot and companion well within view of the surroundings, the Ensign was well received. Test flights are promised soon—for a certainty—and probably will have taken place by the time this column goes to press.

Meanwhile, the Jarvis VJ-21 pusher type, two passenger plane, has been scheduled for test flights around October 15. The aircraft still wants a name, however.

The Rotor-Craft helicopter, twin-rotored tandem machine which was announced recently as in mockup construction under military contract, is expected to take to the air after the first of the year. We suggest to President Gil Magill, of Rotor-Craft, that he simply call his proposed line of 2, 4, 12, and 24-place machines the "Magillicopters". Couldn't be any worse than some of the uninspiring names being kicked around for newly designed aircraft.

John Beach, director of sales for Harlow Aircraft, has been in Dallas, Texas, to establish a branch office. Ultimate aim of the company is to have three distribution points, in addition to Los Angeles offices. The Interstate Cadet, recently purchased by Harlow, will probably be run off the assembly line in its modified form any day now. General Manager and Chief Engineer Frank Deryuen, of Harlow, is a story in himself, having been in charge of assemblying the Harlow L-6's for the Chinese during the war.

Out at Hockaday Aircraft, in Burbank, a two-place high wing (33-ft. span) monoplane, with a 130-horse Franklin power plant, is now undergoing CAA engineering tests and will be test flown about November 1. This ship's predecessor has been in the air . . . as a matter of fact has 100 hours on it . . . but in 1944 the acute manpower shortage caused Hockaday to postpone development.

Turbines for Northrop Wing

Lamotte Cohu, president of Northrop, decided it was high time for someone to discuss the aircraft industry recently, called a press conference and announced that production backlog of his company had been cut about 64 per cent. However, anyone who thought the conference would reveal the progress of the Northrop Wing was sadly mistaken.

Work on the Wing does include the development of a "difficult type of power plant"—a gas turbine engine. He also announced that a "new ship", the prototype of which is now flying, would be unveiled in January or February.

One of the best question-and-answer men in the business, Cohu was blunt on the subject of whether Northrop will enter the private plane field, said the company would hardly "run in the rat race—everybody else is!"

★ ★ ★

SKY'S THE LIMIT

(Continued from page 76)

ernment is capable of passing overnight from the statistically absurd to the sublimely omniscient on all aspects of the nation's economic life. How many times more governmental employes than were needed to win the war it would take to do this is anybody's guess.

"If the so-called 'full employment' bill passes, the hearts of statisticians in government will leap with joy to contemplate the field day ahead. They will proceed immediately to lay out a grandiose system of questionnaires and demands for information never before seen outside Nazi Germany. Nor would it be on any 'please cooperate with us' basis, but would be backed with the full power of government, with fines and imprisonment for failure or refusal to comply and reveal for the record that which one is not sure he plans to do in the year following. Before the committee this was merely referred to as the need for more 'statistical series.'

"It strains the capacity of the average family to prepare a budget with the same degree of certainty that the Murray-Wagner Bill imputes to the master minds in Washington with respect to the millions of business establishments and scores of millions of families in these United States.

"Coupled with this measure is the sly campaign to convince the American people that a national budget of at least twenty-five billion dollars will be necessary after the war. The constant repetition of twenty-five billion dollars, as in the editorial in "Colliers" Magazine in the week of September 8th, along with the slogan 'full employment', is calculated to prepare our minds for acceptance of the fiscal consequences of the colossal scheme.

"The average employer knows, whether or not Congress does, that the greatest contribution to full employment our government could make would be to stop the consideration of this and other measures which tend to convince millions of workers that the government will take care of them, and to disdain the millions of job opportunities now going begging; and to give evidence at the earliest opportunity of a firm intention to achieve a balanced budget for the first time in over fifteen years, as all honest individual citizens and governments must eventually do.

"If the Murray-Wagner 'full employment' law should be enacted the American people will almost certainly find themselves shackled with a system of controls over their personal and economic liberities, by their own government, five years hence, more obnoxious than that which we shall then be applying to our recent enemies, the Germans and Japanese. Is it for this that the American people have willingly gone through the agony of fighting and winning the most tremendous war in history?"

★ ★ ★

Business Does Make Friends

Improved social and cultural relations inevitably result from improved business relations. Business *does* make friends.

The acceleration of trade and the development of new markets is a task air transportation is ideally fitted to perform. This Braniff has recognized in proposing a coordinated domestic and international system between business centers of the Western Hemisphere. Such a system will contribute substantially to the good neighborliness of the Americas, aiding full employment and prosperity among the nations served.

BRANIFF AIRWAYS

HELICOPTER TRAINING

(Continued from page 39)

per machine are now necessary. Design and manufacturing improvements are reflected in that, but Sheppard Field's instructors go out of their way to give credit to Army mechanics.

An idea of the high cost of helicopter maintenance can be gained from a placard stenciled on all spot-welded, fabric-covered rotor blades, reading "maximum life 100 hours." Moreover, one damaged blade usually means replacing all three rotors to maintain balance. Perfection of all-metal blades, now under way, is expected to go far in overcoming this. The rotor head, with its mass of complicated parts, has a life of from fifty to 100 hours.

Army helicopter training is in its infancy. There are less than 200 rotary-wing pilots on the AAF's roster. Their combined helicopter flying time totals only about 5,000 hours—large numbers of fixed-wing pilots, particularly airline captains, have individual records greatly exceeding the total helicopter flying time of all AAF pilots. The AAFTC's helicopter flight training program was inaugurated in June, 1944, at Freeman Field, Indiana. It was moved to Chanute Field, Illinois, in December, 1944, and was transferred again on June 1, 1945, to Sheppard Field. The peak of helicopter training was reached on V-J Day, when fifty students were in training and the school possessed thirty-two helicopters.

Flight Experiences Cited

Captain Bert E. (Pappy) Thrasher, a helicopter instructor with 357 hours of "egg-beater" time, and who was an airport operator at Tacoma and Kelso, Washington, prior to entering the service, demonstrated the R-6A's maneuverability to us. Pappy performed just about everything in the book, but his specialty was a final approach accomplished by descending from 400 feet to about thirty feet, pulling up steeply to about 700 feet where his airspeed dropped to zero, settling gently around a 180-degree turn into the wind, and descending by autorotation onto the hangar ramp—descending, that is to the "air cushion" several feet off the ramp, where the engine was again opened to full power until the wheels settled unnoticeably to the concrete.

Of all helicopter maneuvers, hovering is the most exacting on the pilot's skill. He has to co-ordinate five controls; stick, pitch, power, yaw and torque (rudder for yaw and torque). The R-6A is flown by (1) throttle, (2) rotor pitch, (3) stick and (4) rudder. Throttle and pitch are combined on one lever, which has a motorcycle-type twist throttle. The improvement pilots would like most to see is a rotor-pitch control automatically operated by the throttle to eliminate the pitch lever.

Here are R-6 controls and compact instrument panel as seen through auto-type door. Pedals are for rudder control of torque. Stick is conventional (this one has AT-6 grip with trigger for radio). At right center, between pilots, is pitch and throttle lever protruding forward and having motorcycle twist-type throttle control. Rudder pedals and instrument panel extend beyond floor into curvature of glass nose.

The helicopter pilot is a pretty busy man all the time. He can't trim the ship and let it fly itself as in an airplane, and the controls, even though highly sensitive, require so much effort and attention they make flying much more fatiguing than in airplanes; you really hold onto the helicopter stick, which is constantly shimmying and dancing. Lag in control reaction is pronounced and much anticipation is required. On the other hand, it can be flown with feet off the rudder pedals, and turns are made without help from the rudder. But the important difference is that you don't select a point on the horizon, as in an airplane, and keep the fuselage level with it—the helicopter has an inherent pendulous motion of swing and sway, both laterally and longitudinally. Instructors say airplane pilots always over control the helicopter until they become familiar with its strange antics.

One of the most peculiar helicopter accessories is its "ground cushion." This phenomenon results from the increased density of air beneath the rotating wings when close to the ground, from about thirty feet down. As the downrushing air rebounds, only to be forced back, it forms a definite "mattress" which actually supports the aircraft. Hovering is the essential phase of both taking off and landing.

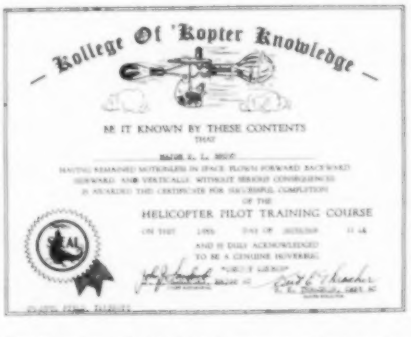
Taxiing, which is really "flying on the ground," is avoided by helicopter students; it is safer to rise up a few feet and actually fly. Wind gusts and an assortment of hard-to-explain helicopter eccentricities make ground handling extremely difficult. Sideward and backward flight are perfected by "flying the square," a training maneuver in which the sides of a square are flown with the nose headed the same direction all the way from start to finish.

Rapid Development Expected

Pappy Thrasher and his fellow instructors are calm but positive in their views on the helicopter, past, present and future. "It needs a lot, all right," he says, "but then it has already become much more practical and efficient than most people believe. I've got to hand it to Igor Sikorsky — that old R-4 trainer may look like something Rube Goldberg turned out but it's got a lot more flying and dependability in it than the first airplane trainers the Air Corps used. We figure the helicopter has advanced as much in three years as the airplane did in fifteen. If it keeps that up there's going to be a great day coming pretty soon."

When we visited Sheppard Field, Pappy and the others were awaiting Army decisions about (a) the instructors' release from service and (b) peacetime helicopter training. Operations had been suspended after V-J Day as in all training programs. Captain W. H. Moore, an instructor with slightly under 300 helicopter hours, said he doesn't figure helicopters will mean much to him, personally. "All I can see is a chance to pick up some quick money by using the helicopter as a stunt act — if I could buy one from the surplus pool. I hope the oil companies can find a way to use them for flying the pipelines. But in a few years a helicopter rating won't mean so much. There's nothing super about learning to fly one now. Think what will happen when it is made easier."

★ ★ ★



College Of 'Kopter Knowledge

BE IT KNOWN BY THESE CONTENTS

HELICOPTER PILOT TRAINING COURSE

Graduates of AAF helicopter pilot training course receive this "diploma" depicting the aircraft as an egg-beater and the pilot as a "hoverbug." The seal carries the likeness of the real thing, engaged in a balancing act featuring co-ordination of nose and tail.

Announcing AIR MARKET DATA SERVICE

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If sales of aviation products and services are to reach the proportions suggested by optimistic predictions, the industry will have to abandon the old hit-or-miss sales efforts which characterized the prewar era. Greater competitive pressures and new marketing problems force the industry to cease reliance on costly guess work and "hunches."

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Air Market Data Service consists of a large loose-leaf leather-bound volume containing aviation and general market data on every community, county and state in the nation. There are 85,350 carefully picked items of specific information on 3,414 communities; 94,076 items of information covering every one of the 3,044 counties in the U. S.; 46,182 specific items of air market information arranged by state and nation; a state aviation information map, in color, of each state in the U. S., with more than a dozen national aviation maps and charts and sample formulas and suggested methods of using the data.

But Air Market Data Service goes beyond the scope of one master volume of specific aviation and general market data. The Service will include regular monthly supplements, constantly augmenting the original volume with up-to-the-minute corrections and brand new air market information. Also included will be a series of probative surveys for determining consumer desires, trends, and resistance as well as interpretations of scientifically gathered information and statistics.

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GLIDERS ARE COMING

(Continued from page 47)

both pleasure and profit, and before very long. The thing that was once considered a form of sport or a plaything is now displaying its qualities as an important cog in aviation. Gliding is for everyone and certainly it will increase the skill of pilots so far as precision flying and landings are concerned. I found the glider to cruise during maneuvers at 55 mph. The rush of air over the wings sounded like the whoosh of waves on a beach. When that sound stops it is time to get the nose down and pick up some flying speed. Landing speed is slightly lower but it is a good idea to keep plenty of flying until you become well acquainted with the characteristics of the motorless planes.

Low Costs Possible

Laister-Kauffmann's plans for glider parks introduce a number of interesting features. They are aiding their salesmen and representatives to establish such gliding parks and are working out a program that will appeal to those who already fly airplanes.

Highlights of the projects provide that glider activities of any community be concentrated at a field where there will be no interference with powered planes. One or more airplanes will be based at the field and these will be used for towing the gliders and sailplanes. It has been suggested that owners and pilots of gliders hire the services of the tow pilots and subscribe to such service on a monthly basis at a reasonable cost. It has been suggested that glider pilots purchase a book of tickets from the tow pilot, with each ticket in the book good for one tow aloft. In this way, tows to any altitude might be good purchased for as low as a dollar. When the glider or sailplane is released at the desired altitude and position, the aid of thermal currents might be sought and a reasonably long flight conducted at a very low power cost. In this way, several flights might be conducted for what a conventional airplane pilot might spend for gas and oil.

There appears to be no end to the exploitation ideas available from the large staff of glider experts at Laister-Kauffmann. Murray Whitehead, sparkplug of the organization and a seasoned airplane and glider pilot and enthusiast, has recently announced that power units which may fold into the thick wing of the glider, when not in use, will soon receive experimental tests on current model cargo carriers. This will mean that loaded gliders may be dropped into secluded clearings and then flown out empty with the aid of the low powered engines.

The development of powerless aircraft is destined to accomplish many things in the world of transportation, sport and recreation. No one will deny that much sport and a new sensation of flying may be derived from gliders designed for such uses. On the other hand, the glider presents new possibilities for the transportation of cargo and even human beings. It will play a permanent part in the development of the back country of many nations. The possibilities in South and Central America cannot be challenged. Gliders can be used to advantage where even the amphibian cannot easily penetrate. Laister-Kauffmann has carefully and thoroughly studied the potentialities of the glider both here and abroad. The long range program they have planned appears to indicate the answers to many glider questions that may arise either in this country or abroad. ★ ★ ★

Airmen's Calendar

October 15—PICAO Interim Council, Reconvenes in Montreal.

October 16 — International Air Transport Association, First Meeting, Montreal.

October 24-25—Kansas State Airport Conference, Kansas State College.

October 25—Institute of Aeronautical Sciences, Washington, D. C., Area Meeting.

November 5-7—National Association of State Aviation Officials, Annual Meeting, Coronado Hotel, St. Louis.

November 15-16—Arizona State Aviation Conference, Tucson.

November 19-20 — Tenth annual meeting, National Aircraft Standards Committee, Chicago.

November 19-21—National Aviation Clinic, Oklahoma City.

December 16-17 — Aviation Day celebration, El Paso.

December 17—Institute of Aeronautical Sciences, Washington, D. C., Meeting, Wright Brothers Lecture.

January 4-6—Miami Air Races.

FLIGHT INSTRUCTOR

(Continued from page 51)

enough, or he has tried to hold the nose too high as he rolled out.

Use of rudder in the initial bank is really determined by whether or not it is needed to prevent a slip. This, of course, is dependent on how steep the bank is, how long it is held before pulling the nose up and whether it is to the right or left. In a slight bank to the left the torque may make it unnecessary to use rudder, while in a chandelle to the right it will usually be needed. In the beginning I prefer that my students do not use rudder—it is the elevator which produces the turn in a chandelle. I tell them to apply aileron, then elevator in a rather mechanical "1-2" fashion. Once they have the basic idea they naturally slide the two movements together.

The wing-over is another familiar maneuver which is subject to a variety of interpretations. Like the chandelle, any of these versions of the wing-over involve constantly changing speed, attitude and control and therefore develop a student's consciousness of these factors. They cannot be done mechanically, so he must relax and adapt himself to the changing conditions of flight.

Like the chandelle also, it is difficult to say just when an ordinary climbing turn followed by a diving turn becomes a wing-over. At the other extreme the distinction between the wing-over and the hammer-head stall is that in the former the airplane is not allowed to stall.

In doing any acrobatics, your students should be impressed that the reason is to develop their orientation and control of the airplane, and that you are not preparing them to put on an act at an air show. It is worthwhile for a pilot to wish to attain perfection in any branch of flying, but he should remember that acrobatics can be done just as perfectly out of sight of the airport and at 3,000 feet as they can be done before a sadistic audience ten feet off the ground. ★ ★ ★

Margaret Needham, commercial glider pilot at Laister-Kauffmann school, is shown here prior to demonstrating Yankee Doodle Two to Ken Newland, director of aviation at Stephens College, Columbia, Mo., and new commander of the Missouri Wing, CAP.

Weekend in Honolulu? *Let's go!*

No fanciful dream on a designer's drawing board is this huge six-engined Clipper. Months ago Pan American placed an order with Consolidated Vultee for a fleet of these sky-giants . . . soon they will become an actuality.

204 passengers and 7 tons of mail and freight will speed non-stop across the North Atlantic to Europe. Daily service to Honolulu and Latin America is part of Pan American's sweeping postwar plan to bring distant places closer than they have ever been before.

These are the types of planes for which Chandler-Evans builds carburetors and fuel pumps. The larger planes — with engines from 400 H.P. up to the big ones needed by this new sky giant — demand the engineering precision and dependability that is built into every CECO product. As it is serving the Liberators, Superfortresses, and other big war planes today, so will Chandler-Evans supply tomorrow's greatest air liners.

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ARMY NAVY

CHANDLER-EVANS CORPORATION SOUTH MERIDEN CONNECTICUT, U.S.A.

TROOP CARRIER OPERATIONS

(Continued from page 58)

railroad boxcar. Features include a low-slung fuselage with an eight-foot rear door which reduces loading problems to moving-van simplicity. In addition, a ramp can be let down from the fuselage, and vehicles such as a two and one-half ton six by six truck, an airborne tank or a 75 mm. half-track are easily driven into the plane. Two powerful 2,100-horsepower engines lift the C-82's twenty-five gross tons into the air. The new plane will carry forty-two fully equipped soldiers and their fighting material.

Moreover, huge four-motored cargo planes, some of which have been used up to this time solely as transports between this country and various theaters of war, were becoming part of the Troop Carrier combat fleet. Of long range, and with large capacity, the cargo planes were being modified for future Troop Carrier combat duty. To meet the needs of Troop Carrier in the Pacific, the fuselage of these large four-motored cargo planes was reinforced to make possible the towing of gliders — especially the newer and larger CG-10 glider, capable of carrying large artillery pieces and tanks— and an extra jump door was cut into the fuselage to make possible a double stick of jumping paratroopers, thus landing the larger number of jumpers closer together. An electrically operated belt conveyor for shoving cargo resupply bundles out in bunches instead of singly was also developed, dropping tons of supplies in seconds.

Possibly for the future, one of these four-motored cargo planes planned for Troop Carrier use will be the XC-97 giant cargo double-decker plane built by Boeing, which carries approximately 100 persons with flying crew. The XC-97's wings, landing gear, tail surfaces, and engines, are interchangeable with the B-29 Superfortress.

Another recently developed plane— the new six-engine cargo plane XC-99, is readily adaptable as a hospital plane or as a Troop Carrier with a capacity of several hundred soldiers. It has been developed by Consolidated Vultee Aircraft Corporation of San Diego, Calif. The XC-99 has a wingspan of 230 feet, a length of 183 feet, is powered by six pusher type power plants, has a tricycle landing gear, pressurized cabins and a service ceiling of 30,000 feet.

In the past two years, the Army has developed a new instrument of warfare with stupendous possibilities. The bombing airplane has served to provide us with artillery possessing a range not of twenty miles but of twenty hundred miles. The troop carrying airplane gives us in turn a ground force capable of leaps instead of strides. In neither respect is Troop Carrier's present progress any measure of the progress which time will make possible.

It's no wonder the Japs were ready to surrender. ★ ★ ★

LIAISON PILOTS

(Continued from page 72)

3. 100-horsepower engine.
4. Flaps.
5. Retractable landing gear.
6. Controllable-pitch prop.

Lt. Willard W. (Smitty) Schmidt, 32, who received sixty hours of lightplane instruction while training for his glider pilot wings, is now dividing his time between L-4'ing and co-piloting a C-47 for the 51st Troop Carrier Squadron in the MTO. The former Neenah, Wis., paper salesman would like to see hotels built in connection with airports.

Lt. R. W. Stevens, 37, Benton Harbor, Mich., a garage owner who flew lightplanes for seven years before he became an AAF glider pilot three years ago, believes the L-5 is ideal for liaison work, but not for civilian use. Most lightplanes are underpowered, too slow; however, that opinion is more than somewhat colored by the fact that Steve's been co-piloting C-47's for the 51st Troop Carrier Squadron lately.

After he returns to civilian life Lieutenant Stevens is going to cash in on his lightplane-flying and engine-repairing experience. He's going to find himself a nice spot somewhere in Wisconsin or Michigan or Minnesota where he'll set up a hunting and fishing lodge complete with landing strip, cottages, boats, hangar facilities. As a genial guy with an all-out personality, Stevens appears at this writing to be "the paddle-foot most likely to succeed."

Here's what he thinks the ideal post-war plane should incorporate:

1. 175 to 185 horsepower engine.
2. A four-passenger job.
3. A two-way radio. ("I've become two-way radio conscious since being in the Army," he explains.)
4. Complete instruments for bad-weather flying.
5. Flaps.
6. In general, a plane built along the lines of the Fairchild C-61.

Lt. Paul J. Sevigny, 25, of Danville, Vt., a former machinist for Fairbanks Scale Company, puts a heap of store by the Piper Cub. Here's why:

"I was taking a sergeant for a hop in the Rome area," he says. "When we were 350 feet, the top left wing fabric peeled off. Naturally, this made me lost lift, and twice the Cub tried to go into a spin. I dove her almost straight down and flew into a plowed field and landed against a furrow. It was a three-point landing. Didn't even wash out the landing gear. But don't think this happens all the time. This particular ship was three years old and the line chief slipped up on inspection."

For his ideal lightplane Sevigny suggests:

1. A 125-horsepower engine.
2. Cruising speed of 100 mph. or better.
3. A two-seat job.

So it all adds up to the voice of the AAF's lightplane-flying gang. They've been flying the putt-putts under the toughest conditions. They know what their air jeeps will do and what they won't do. And these AAF lads have some pretty definite ideas about the future, too. What they have to say is worth anyone's while to listen to.

★ ★ ★

Lt. Paul J. Sevigny wants a 125-hp. two-seater.

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Industry Needs U. S. Orders Now to Pull Through Depression Period

Guy W. Vaughan, president of Curtiss-Wright Corporation, told stockholders recently that both the extent of the current depression facing manufacturers of combat airplanes and the time involved is largely "up to Congress," which is expected soon to authorize military experimental contracts and production orders for advanced models in sufficient volume to tide the industry over the worst period.

"In the commercial field, government policies are clouding the issue. Surplus transports are being disposed of, both domestically and overseas on a basis that takes away a considerable potential of business from the aircraft manufacturers. The exception is the case of one or two companies who produced transports late in the war and in such small quantities that there is little chance of surplus disposal affecting their sales.

"It is hoped that Congress will realize the problems that confront the industry and be realistic in its approach to their solution. The experience of the last war should be proof enough of the proposition that the best and cheapest policy for this nation to pursue is to keep an Air Force, ground forces and a Navy of sufficient strength to be expanded to cope with any future aggression.

"The aircraft companies that are financially strong and have the best engineering and research talent are the ones that are going to pull through the present depression. Some are bound to fall by the wayside."

Constellations for Eight Airlines to Use Improved Model Wright Cyclone 18

Lockheed Constellations, powered by 2,200-hp. Wright Cyclone 18 aircraft engines, have been ordered from Lockheed by eight airlines, providing 300 mph. transport to all parts of the world. The airlines are American Export Airlines, Eastern Air Lines, Pan American World Airways, Pan American-Grace Airways, French Government Airlines, Transcontinental & Western Air, Inc., KLM and KNILM. The engines are said by Wright Aeronautical Corporation to be of a "vastly improved" model of the original Cyclone 18 developed for the Superfortress.

Republic Converting 50 C-54's for Airline

American Airlines has contracted with Republic Aviation Corporation to convert fifty C-54's into 60-passenger commercial airliners to expand its passenger service 300 per cent. Completion of the first converted C-54 is scheduled for December, with the full contract of fifty planes to be finished by May, 1946. The project will help Republic tide over the reconversion period until it can begin on its postwar planes, including the 400-mph. Republic Rainbow, luxury airliner, and the four-place Seabee for private flying.

FIRST AERIAL PHOTO OF LOCKHEED PLANT AT BURBANK since the war began shows the largest hangar of its type in the world (center), in which is being completed the huge Lockheed Constitution, details of which are still a secret. In foreground are numerous Constellations and PV-2 Harpoon bombers. Picture shows only portion of Lockheed's total facilities which comprised over six million square feet of floor space during the war. —(Lockheed Photo.)

Industry Leaders to Advise NACA on Needs

The National Advisory Committee for Aeronautics has established an industry consulting committee to advise the NACA of the general research, policy and needs of industry. The committee is composed of eight leaders of aviation manufacturing and operating companies and members serve for a one-year period. Members of the committee are Lawrence D. Bell, Bell Aircraft Corp.; Jack Frye, Transcontinental & Western Air, Inc.; Robert E. Gross, Lockheed Aircraft Corporation; H. M. Horner, United Aircraft Corporation; Beverly Howard, Hawthorne School of Aeronautics; J. H. Kindelberger, North American Aviation; C. Bedell Monro, Pennsylvania-Central Airlines; and William T. Piper, Piper Aircraft Company. The first committee meeting was held last month at NACA's laboratory in Cleveland.

AIA Committee Forming Plans for Export Sales

The Aircraft Industries Association export committee is developing plans for foreign trade. Irving H. Taylor is chairman and John H. Payne is AIA export service manager. Members of the committee are: Mr. Taylor, Douglas Aircraft Corporation; Mr. Payne, J. T. Geuting, Jr., and Bert C. Goss, Aircraft Industries Association; C. T. Zaoral, Bendix Aviation Corporation; Robert B. Lea, Stanley W. Bedell and Wood T. Henry, Sperry Gyroscope Co., Inc.; Alfredo de los Rios and Gunnar Erikson, Fairchild Engine & Airplane Corp.; Robert Kinkead and Fred B. Collins, Boeing Aircraft Co.; J. Maurice and R. J. McGivney, Consolidated Vultee Aircraft Corp.; Wayne W. Parrish, American Aviation publications; Robinson Murray, Irwin Vladimir & Co.; Charles I. Morton and W. F. Goulding, Curtiss-Wright Corp.; E. K. Hubbard and A. R. Christie, United Aircraft Corp.; and H. W. Flickinger, Republic Aircraft Corporation.

Beech Names Safford Export Sales Manager; Kelly Heads Publicity

Beech Aircraft Corporation has made appointments in two departments affecting commercial sales plans of the company. An export sales department has been established, to be headed by E. S. Safford, former head of contract administration for Beech and an industrial engineer. W. Homer Kelly has been named public relations director for the company after serving as assistant personnel director.

ATSC Merges Procurement and Readjustment Units

Merger of the procurement division and the readjustment division of the Air Technical Service Command into the procurement division as a postwar plan of the ATSC has been announced. Brig. Gen. Edwin W. Rawlins, former head of the readjustment division, directs the new division. The end of the war brought a decrease in the AAF procurement program and an increase in readjustment work, making possible the consolidation of the two divisions.

1,000 AiResearch Workers Get $450 Severance Pay

Since V-J Day over 1,000 employes of AiResearch Manufacturing Company, Los Angeles have received severance checks averaging $450 each, provided by a unique retirement and severance fund established in 1942 by Cliff Garrett, president and founder of the Garrett Corp., of which AiResearch is a division. Funds were accumulated by depositing a full month's pay for every year of service, the deposits being made every six months in the amount of two weeks' pay. The plan was also used for sickness, lay off and retirement benefits.

Annual ADMA Meeting in Cleveland, Dec. 10-11

The Aviation Distributors and Manufacturers Association will hold its third annual meeting in Cleveland, December 10-11. Members will discuss problems that are common to them. The last ADMA meeting was held last December in St. Louis.

Technical Board to Co-Ordinate SAE Groups

A technical board of twenty-three high-ranking automotive engineers has been appointed to co-ordinate and supervise all technical committee activities of the Society of Automotive Engineers. L. R. Buckendale, of the Timken-Detroit Axle Co., was named chairman of the board. The board will direct the development of a new co-operative engineering program. The first meeting was held recently, at which plans for gradual transformation of the SAE War Engineering Program into a co-ordinated peacetime program of technical committee activities, rendering engineering advisory service to industry and government were made.

Independence of Surplus Disposal Agency Urged

Criticizing present conditions for war surplus disposals, and calling for their revision by Congress, the U. S. Chamber of Commerce board of directors has recommended that the disposal agency be made independent of executive departments, and accountable only to Congress. Heretofore, the Surplus Property Board had to consult various other government agencies before determining policies. The Chamber also asked for the elimination of preferences from the law. The Chamber said that delays also were caused because the clearance of disposal of plants and other property had to come from Congress or the attorney general.

Toys From Northrop

Northrop Aircraft, Inc., manufacturer of the P-61, the XB-35 Flying Wing, and a third still-secret airplane, has announced that its wholly owned subsidiary, Northrop-Gaines, Inc., will build lightweight cast aluminum toy trucks and other toys. Northrop-Gaines, Inc., was formerly named Social Foundry, and is located in Los Angeles.

Chandler-Evans Moves to West Hartford; Wright, Gustafson in New Posts

Chandler-Evans Corporation is to move to West Hartford, Conn., the location of the parent plant, Niles-Bement-Pond. The move is to be completed before the end of the year, but the separate identity of the products or the company will not change. During the war peak, Chandler-Evans once operated at four localities—at Meriden, Wallingford, Dayton and West Hartford. These plants produced carburetors, fuel pumps and accessories. Since the cancellation of war contracts, the only plant economical to keep was the one at West Hartford.

B. H. Gilpin, vice president and general manager, also announced the appointment of Alexander M. Wright as assistant general manager, and Floyd C. Gustafson as sales manager. Wright was manager of the Dayton plant and Gustafson was formerly service manager.

Lear Headquarters Moved to Grand Rapids

Lear, Incorporated, has moved its executive, sales, engineering, procurement and accounting departments from Piqua, Ohio, to Grand Rapids, Michigan, and production is to continue at Lear's plants in Grand Rapids and Piqua. The company manufactures aircraft and home radios and electro-mechanical actuators and accessories.

30,000 AAF Mechanics Trained at Boeing

After graduating about 30,000 students, the Boeing-operated army aircraft mechanics and engineers factory training center is to close this month. The school was founded in 1942 to teach maintenance methods to those who kept the Boeing planes flying.

Constant Tension in New Aircraft Cable

A new-type cable for aircraft rudder and ailerons that does away with a number of aeronautical difficulties has been developed by the American Steel and Wire Company, a subsidiary of United States Steel Corporation. The new cable is nickel manganese alloy steel, thin, flexible and assures constant tension by contracting and expanding at almost the same rate as aluminum. Sizes range from one thirty-second to one-fourth of an inch in diameter.

30 Per Cent of Luscombe Workers Are Veterans

More than 30 per cent of the employes of Luscombe Airplane Corporation at Dallas are ex-service men and women, according to L. H. P. Klotz, president, who said that the percentage is expected to increase. Klotz stated that the corporation in moving from Trenton, N. J., to Texas, is trying to be a Texas organization, with more than 90 per cent of the personnel being Texans.

Air Associates Distributes Parker Valves, Fittings

Air Associates, Inc., has been appointed national distributor for Parker Appliance Company's aircraft valves and fittings. For distribution, Air Associates will stock parts at Teterboro, Atlanta, Chicago, Dallas and Los Angeles. The company will also help Parker engineers by aiding designers and manufacturers in solving hydraulics application and installation problems.

Lightweight Gasoline Heater Installed in Waco

The Waco Aircraft Company has obtained Civil Aeronautics Authority to install a 15,000-btu Janitrol aircraft heater in its five-passenger VKS-7F model. This is the first installation of combustion-type heaters in private planes. The heater is manuafactured by Surface Combustion Corporation, Toledo, Ohio, and is easy to install, weighing only seven and one-fourth pounds.

Continental Earnings

Continental Motors Corporation's net profit for the nine months ending July 31, 1945, was $3,739,384.76 after all necessary reserves and provisions were taken out. The total for the same period last year was $4,050,757.12.

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NEW PRODUCTS

Aluminum Rectifiers

Radio Receptors Company, Inc., New York City, has announced a new line of selenium rectifiers which meet every requisite for a modern a. c.-to d. c. conversion unit. Efficiency, long life, compactness and an almost total absence of maintenance costs are some of the advantages of the rectifier. It utilizes mostly aluminum in place of iron or similar metals. Two-thirds weight is reduced by the use of aluminum, and it also enables more efficient heat dissipation.

Silicone Varnish for Insulating

Dow Corning Corporation, Midland, Michigan, has produced a new heat-stable, waterproof varnish for impregnating electrical equipment. It is called DC 996 Silicone varnish, and it cures at 300 degrees F. Because of the low curing, the varnish enables all shops to use the silicone insulation. Some advantages of the product are greater protection due to sustained overloads; increased service life of electrical insulation; higher operating temperatures; protection against excessive moisture.

Jig Borer With Precision Table

Featuring a large non-detachable precision rotary table built into the machine, a new jig borer is being manufactured by Pratt & Whitney, division Niles-Bement-Pond Company, and is known as P&W No. 3B Jig Borer. Two table sizes are available, 42" and 48" in diameter. The table is equipped with a precision worm indexing mechanism, providing accuracy. Power is provided for indexing the rotary table as well as the regular horizontal and transverse power traverse on the machine slides. Suitable binders lock the table in position solidly while work is being bored. Construction is rigid and provides handling of large jigs.

New Pesco Feathering Pumps

Pesco Products Company, division of Borg-Warner, has manufactured many hydraulic pumps for feathering propellers, the newest being Model 1E-777-AC. It contains the Pesco pressure loading feature, weighs 14.4 pounds and has a capacity of four gallons per minute at a pressure of 400 pounds per square inch. It operates two of every fifteen minutes at 1,000 pounds per square inch.

Rust Remover Also Inhibitor

A rust remover has been developed by the I. S. E. Company, formerly Industrial Sales and Engineering Company. It is known as formula 314, and dissolves all rust on iron and steel. The product serves a dual purpose, for as well as removing dust, it also leaves a thin coating of chemical on the metal, preventing further rusting. The product may be applied by immersion, brush or spray.

Versatile New Air Compressor

Pacific Airmotive Corporation has developed Model 2000 aircraft compressor unit, type "C". It is mounted on three 16 by 4 pneumatic tires, and is a high pressure dehumidifier container for 2000 pounds working pressure. The unit contains high and low pressure valves and gauges. The compressor will deliver on high pressure service compressed air for low pressure air requirements. In the unit are proper cooling and vapor removing devices.

Threaded Caps By Stamping

A new line of protection pipe caps and pipe plugs, utilizing a new stamping method, is being manufactured by Tubing Seal-Cap, Inc., Los Angeles. Claiming the first time that small fittings with fine threads have been stamped, the threading process eliminates machining and secondary operations.

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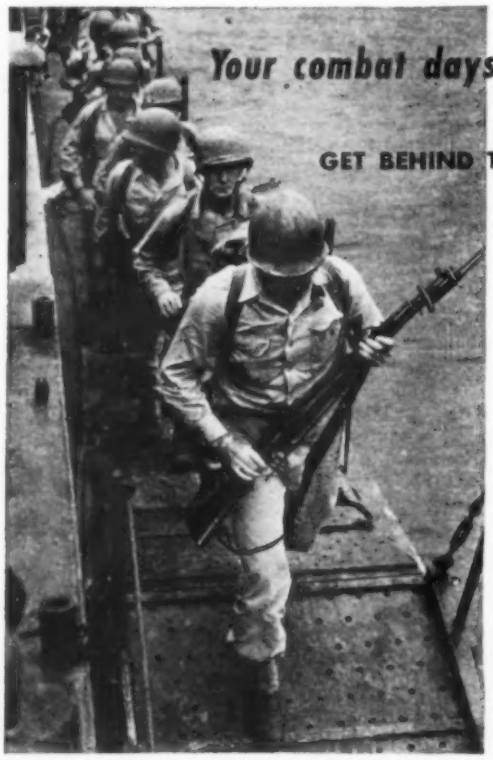

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3. shank expansion is unusually broad—produces tight, rigid, permanent joints
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6. Cherry Rivets are made in several diameters, heads, grip lengths, alloys—special rivets to order
7. there are three types of Cherry Rivets—self-plugging, regular hollow and pull-through hollow
8. hand and pneumatic guns are small, lightweight and easy-to-handle
9. Cherry Rivets can be installed quickly and easily, are just as easy to remove for further servicing
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Nicholson Peale Holman Kiley

PERSONALS

HUNTER NICHOLSON, formerly with Firestone Tire and Rubber Co., has been appointed Los Angeles factory manager of Kelite Products, Inc. . . . MUNDY I. PEALE, former manager of Republic Aviation Corporation's Indiana division plant, has been recalled to Farmingdale, L. I., to become vice president in charge of all sales for Republic. . . . W. D. HOLMAN has been named the new material chief of Consolidated Vultee Aircraft Corporation's Fort Worth division. . . . LEROY D. KILEY, former head of new devices section of Bendix Aviation Corporation, has been appointed general manager of the Friez Instrument division of Bendix, succeeding A. C. DE ANGELIS, who resigned.

D. B. MARTIN, former manager of Boeing Aircraft Company's London office, has been named Boeing's New York representative. . . . JOHN B. MACAULEY, formerly chief of applied research for Pratt & Whitney, was appointed director of engineering research for Ethyl Corporation, succeeding EARL BARTHOLOMEW, who became general manager of research laboratories. . . . CHARLES L. (LES) MORRIS, formerly chief helicopter test pilot for Igor I. Sikorsky, has been named assistant to the president of Bendix Helicopter, Inc. . . . W. R. HALL, former Royal Canadian Air Force pilot, has been named manager of the western department of United States Aviation Underwriters, Incorporated.

WILLIAM D. STROHMEIER, formerly with Piper Aircraft Corporation and the Hawthorne School of Aeronautics, has joined Charles H. Gale Associates, public relations counsel, to handle aviation accounts. . . .

CLARK M. KEE, former airway engineer for American Airlines, has joined Airways Engineering Consultants, Inc. . . . A. D. PALMER, JR., has resigned as director of public and internal relations for Curtiss-Wright Corporation's airplane division to become associated with Burke Dowling Adams advertising agency. . . . GABRIEL R. VOGLIOTTI has been appointed director of business research of the Jordanoff Aviation Corporation. He was formerly research director for Pan-American Airways System.

FRANK MAHER, former assistant to Oliver L. Parks, president of Parks Air College, has been appointed field editor of *Airports* magazine. . . . ERNEST M. POTTS, a member of the St. Louis *Globe-Democrat* editorial staff, has been appointed director of public relations for Parks Air College, Parks Aircraft & Service, Inc., and Parks Air Transport, Inc. . . . PHILIP C. WAGNER, formerly vice president of Parks Air Transport, Inc., and secretary-treasurer of Parks Air College, Inc., has resigned those positions. . . . VERNON VAN NESS, public relations director of the Miami division of Consolidated Vultee Aircraft Corporation until it closed, has been appointed public relations director of the J. P. Riddle Aviation School in Miami. . . . WILLIAM E. VOGELBACK has been appointed special consultant to Thomas B. McCabe, Army-Navy liquidation commissioner.

JAMES M. RIDDLE, aviation section, RCA, was named chairman of the committee on aircraft radio of the Aviation Distributors and Manufacturers Association . . . FRANK B. HOWE will reopen his publicity office in Los Angeles, handling aviation and industrial accounts . . . DOUGLAS CHARTERS has been promoted to assistant district manager, Southwestern territory, for Turco Products, Inc.

M. N. WEBER will be in charge of the Detroit area, and M. S. JACOBS will be in charge of the Pittsburgh area for Trimount Instrument Company. . . . N. A. DOOLITTLE will represent Ampco Metal, Inc., in Oklahoma, southern Kansas and southwestern Missouri, and W. W. SWAN will represent Ampco in Southeastern Texas, Louisiana, Alabama and Mississippi. . . . GEORGE M. RYERSON has been appointed field engineer of the Plomb Tool Company. . . . EUGENE W. MOORE has been named head of publications and presentations of National Design Service.

JOHN W. CYLER and F. THEODORE HEGEMAN have been added to the sales department of Electronic Laboratories. . . . CARL P. SORENSON, formerly with the Glenn L. Martin Co., has been appointed consulting standards engineer for the Cherry Rivet Company.

JAMES L. CAMP has been appointed assistant sales promotional manager of Luscombe Airplane Corporation, Dallas, Texas. Camp was formerly Texas Wing operations officer of Civil Air Patrol, and was with United Aircraft Corporation, Hartford, Conn., for two years. He is an alumnus of Harvard University and Massachusetts Institute of Technology. . . . COLONEL BERNT BALCHEN has been awarded the Legion of Merit. . . . EDWARD S. EVANS, president of Evans Products Company died at his home in Grosse Pointe last month.

C-W Airplane Division Moving to Columbus; Earle Succeeds Wright

Earle

Curtiss-Wright Corporation has announced plans for consolidation of some of the firm's manufacturing facilities and a reassignment of some of its personnel, according to G. W. Vaughan, president. The airplane division at Buffalo is to be closed upon completion of contracts for the CW-20 Commando transport. The transfer of headquarters, key personnel and manufacturing facilities necessary are to be moved to the Columbus, Ohio, plant early in 1946. Robert L. Earle, vice president in charge of the propeller division, has also been placed in charge of the airplane division. Burdette S. Wright, vice president and formerly in charge of the airplane division, will go to the firm's New York offices to assist in reconversion. G. M. Williams, senior vice president and executive vice president of Wright Aeronautical Corporation, has been on leave of absence as president of the Russell Manufacturing Company. He will return to the company about November 1. F. H. Harrison, vice president, has been named general manager of the airplane division.

W. M. Allen, Attorney, New Boeing President

Allen

William M. Allen, member of the Seattle law firm of Holman, Sprague & Allen, has been elected president of Boeing Airplane and Boeing Aircraft Companies by the board of directors, filling the vacancy left by the death last year of Philip C. Johnson. C. L. Egtvedt, Boeing chairman, had been acting as both president and chairman in the interim. Allen became a member of the board of Boeing Airplane Company in July, 1931, after previously serving as counsel and a member of the board of Boeing Air Transport, Inc., which later purchased Pacific Air Transport. These two companies later became United Air Lines.

Ellington Joins Republic

Ken Ellington, manager of the Aircraft Manufacturers Council, Eastern region, and former secretary of the Aircraft War Production Council, has been named director of public relations for Republic Aviation Corporation, Farmingdale, L. I., N. Y.

Dandy 18-piece Universal Midget Aircraft ¼" Socket Set: 8 Sockets 7/32" to 7/16", Spintype Handle, Sliding T-Bar, Reversible Ratchet, Midget Crescent Wrench, 4 Midget Openend Wrenches, Midget Screwdriver—$19.85. Immediate shipment. Clip ad, mail check now.

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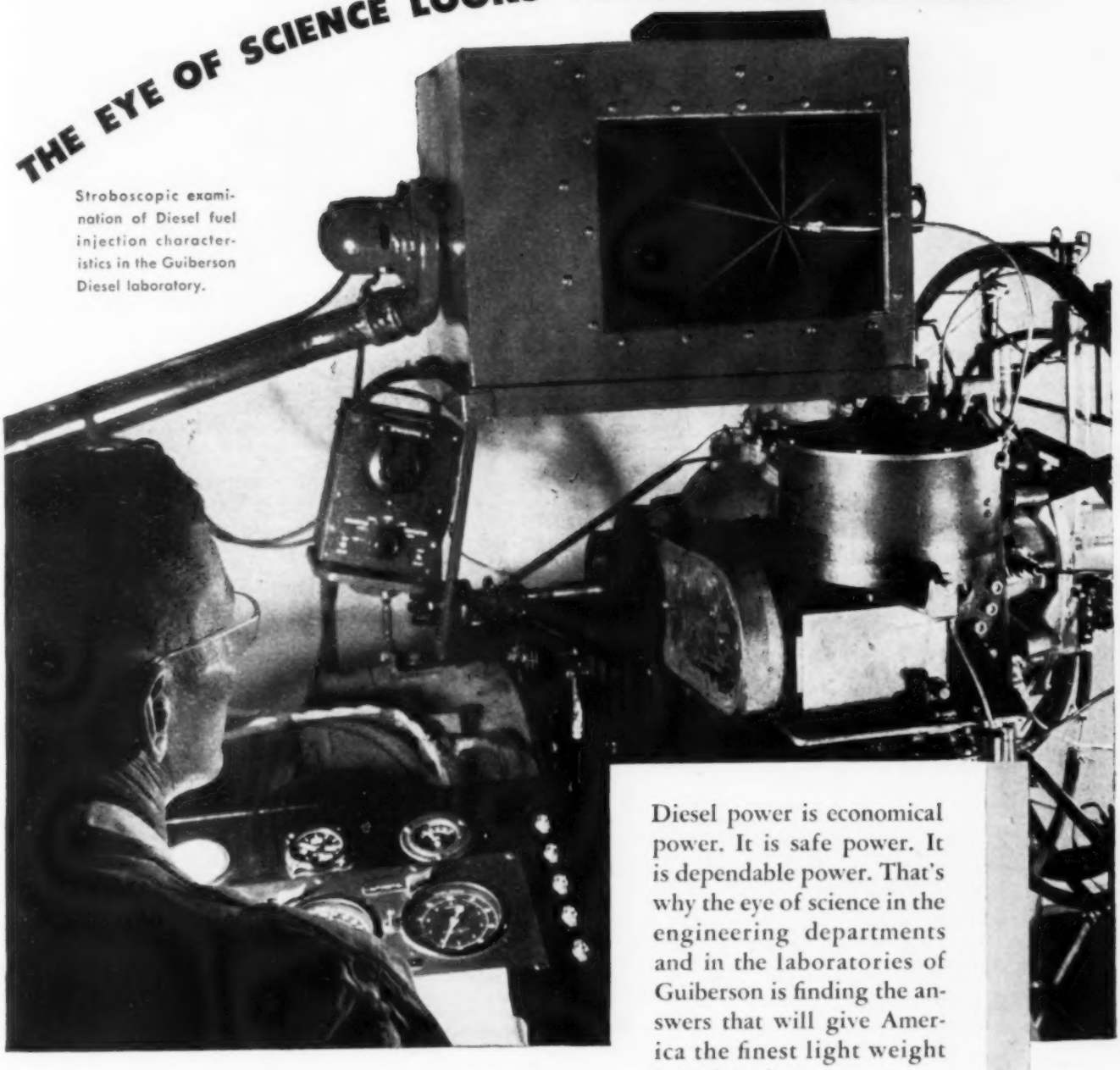
THE EYE OF SCIENCE LOOKS TO DIESEL



Stroboscopic examination of Diesel fuel injection characteristics in the Guiberson Diesel laboratory.

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DALLAS, TEXAS

AIR TRANSPORT

By E. H. PICKERING

The airlines are moving rapidly back to normalcy. This is evident from the number of increased schedules, and inauguration of service to communities that have been without air service during the war. Airlines are adding new schedules almost daily as additional reconverted planes are put into service. The saturation point on DC-3's has just about been met. One airline is debating whether to accept or turn down the latest DC-3 allocated to them. High conversion cost and initial charges, in view of the possibility of early acquisition of new aircraft, is responsible.

Western Air Lines has announced that operation will begin with two daily flights on their new service to the Imperial Valley cities of San Bernardino, Palm Springs, and El Centro, California. Colonial Airlines has announced that service on their new routes into Ottawa, Canada, from Burlington, Vermont, will be in operation this year; and by the first of the year, they expect to be operating their new Washington to Ottawa route via the intermediate points of Massena, Watertown, Syracuse and Binghampton, New York, Scranton, Wilkes Barre, and Reading, Pennsylvania, and Baltimore, Maryland.

Pennsylvania-Central Airlines will soon be adding service to the cities of Elmira, Corning, and Rochester, New York, on their route between Washington and Buffalo. PCA has also requested permission from the Civil Aeronautics Board to resume service over its Knoxville-Norfolk route via the intermediate points of Asheville, Hickory, Greensboro-Highpoint, Raleigh, Rocky Mount, and Elizabeth City, with hope of having the route operating by the middle of October.

Braniff Airways has inaugurated service on its route between Memphis and Tulsa via Little Rock and Fort Smith, but no mention has been made of service to Muskogee, Oklahoma, authorized to be served on this route. TWA has been authorized to operate nonstop between St. Louis, Missouri, and Detroit, Michigan.

Another indication of this return to normalcy is found in Western Air Lines' announcement that their photographer and advertising manager are engaged in a tour of tourist attractions in their section of the country. Still another item indicating the trend can be found in the CAA's relaxation of restrictions against passengers taking pictures from airplanes. Only restrictions remaining on the list is that against taking pictures of military installations.

Air cargo shipments are showing the trend toward normalcy. Air Express figures on shipments out of New York indicate a 7 per cent increase in the number of shipments for the month of August, while revenue for the same period was decreasing over 4 per cent, indicating that shipments of heavy war production items are giving way to economy-dictated shipments of items of civilian production.

Foreign

The normalcy trend applies equally as well to foreign operations as to domestic operations. Pan American World Airways announces that 118 flights are now being added between the United States and points on their Latin American circuit. Service to Venezuela has been increased from sixteen to twenty-six, and service to Colombia increased from sixteen to twenty-four flights weekly. Six new flights added between Miami and Havana bring the total to fourteen flights daily.

The first allocation of surplus four-engined transports to U. S. flag lines granted twenty C-54E's for use on North Atlantic routes. Pan American Airways received eight and American Export Airlines and TWA, six each. Some have already been delivered, and all are expected to be in operation by the first of the year.

According to information received from the Office of Inter-American Affairs, western hemisphere air routes other than those within the United States total one-quarter of the world's total air routes. Fifty airlines operating in Latin America are now flying a total of 125,000 unduplicated miles of air routes, as against a world total of 147 airlines flying approximately a half-million unduplicated route-miles. Mexico and Brazil have led in the expansion of air service in the other American republics during the past year.

The Air Transport Command has announced major cut-backs in its operations over the next ten months. Transport aircraft will be reduced from approximately 3,000 to 650 by July 1, 1946. Personnel will be reduced from 110,000 to about 80,000 or less. Operations over 180,000 miles of their routes is expected to be reduced to 79,000. The ATC will continue to conduct direct service between the United States and occupational forces overseas, flying from New York to Paris, Rome, Athens, and Cairo, and from Paris to Berlin and Frankfort. Opening of a port on the east China coast is expected to eliminate the need for service over The Hump within the next few months, and services to the Eastern Theater of Operations will be long-haul from this country direct to Headquarter bases only.

First scheduled round-the-world service as announced by Air Transport Command began September 28, on the twenty-first anniversary of the Army's first round-the-world flight, which ended on that date in 1924. This round-the-world service will depart from Washington every Friday afternoon, covering 23,147 miles in 151 elapsed hours. Service of the world-circling schedule will be the interconnecting of this country with European and Pacific Theaters.

Personals

Cyril C. Thompson has resigned as vice president of public relations of United Air Lines after seventeen years with the organization. He had worked in the field of early airport and facilities installations, and state and local taxation affecting airline regulations. Col. Ray W. Ireland has been elected vice president of administration of United, effective November 1, when he will be discharged from his present duties as deputy chief of staff of the Air Transport Command. Colonel Ireland was traffic manager for United before entering the AAF.

Col. Laigh C. Parker, formerly chief of staff of the Air Transport Command's European division, last month resumed his former job as traffic manager for Delta Air Lines.

John E. Cook, former general traffic manager for Braniff Airways, has been appointed general traffic manager for Continental Air Lines. Cook had been with Braniff for the past ten years.

Merger of Mid-Continent and American Proposed

Directors of American Airlines and Mid-Continent Airlines last month proposed consolidation of the two companies under a straight stock transaction, with no cash being involved, according to statements by C. R. Smith, chairman of the board of American, and Joseph A. Zock, chairman of the board of Mid-Continent. The proposal goes to the Civil Aeronautics Board for approval. Under the proposed merger, stockholders of Mid-Continent would receive one share of American stock for four shares of Mid-Continent.

Turbine-Propeller Seen as Practical for Carriers

The gas turbine engine incorporates advantages which "hold real promise" for transport planes of the future, according to R. D. Kelly, superintendent of development for United Air Lines. In his study of the application of jet propulsion power to air transportation, Kelly reported that the gas turbine and propeller combination is of simple construction and should have an installed weight of only about 75 per cent of the present conventional air transport power plants for equivalent cruising powers at a given altitude, and because of its light weight, the gas turbine engine will permit greater fuel loads or payloads.

Airline Accountants Meeting

Treasurers and assistant treasurers of the twenty-one airlines will meet in Dallas December 13 and 14 for the quarterly meeting of the Airline Finance and Accountant Conference. Financial problems confronting the airlines at this time are to be discussed, and new methods of corporate finance will be considered. New officers will be elected. C. G. Adams, secretary-treasurer of Braniff Airways, is president of the organization.

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Larger Budget for CAA To Expand Operations

Civil Aeronautics Administration's 1947 budget may include an increase of over 100 per cent for the Safety Bureau. According to the CAA, the new version of the budget is necessary to meet the increasing demands of both scheduled and non-scheduled aviation. Personnel and operations expansion are expected in the safety regulation, technical development and the federal airways fields in the new budget. Installation of very high frequency radio ranges is covered by the new budget. Maintenance on airways for 1947 is estimated to require more than $12,000,000 over the 1946 appropriation.

RFC Begins Sale of Surplus Radio Sets

Surplus war-developed radio, radar and electronic devices that are suitable for civil aviation have been announced for sale by the Surplus Property Board of the Reconstruction Finance Corporation. The material is available through four jobbers: Smith-Meeker Co., N. Y.; Raytheon Products Corp., N. Y.; Air Communications, Inc., Kansas City, Mo.; and Packet-Bell, Los Angeles. The equipment is expected to be useful in both private and commercial aviation.

Miami Air Race Carded for Jan. 4-6

The All-American Air Maneuvers will be held again at Miami, Jan. 4-6, for the first time since Pearl Harbor. Plans are not yet complete for the fourteenth annual program.

Truman to Open Aviation Clinic Nov. 19

The third annual National Aviation Clinic will be held in Oklahoma City November 19-21, with an address by President Harry S. Truman opening the proceedings. Governor Robert S. Kerr is general chairman and William Enyart, president of the National Aeronautic Association, is chairman of the general sessions of the Clinic. Steadham Acker of Birmingham is program chairman and Jack Hull of Oklahoma City is secretary. The National Aeronautic Association is sponsoring the Clinic.

Committee chairmen and vice chairman announced by Stanley Draper, executive director, are:

Resolutions—Dudley H. Dorr, Hale & Dorr, attorneys, Boston, chairman; L. Blois, Bank of America, San Francisco, vice chairman.

Program—John E. P. Morgan, manager Aircraft Industries Association of America, Washington, chairman; William P. Redding, National Aeronautic Association, Washington, vice chairman.

Credentials—James R. Graham, United States Aviation Underwriters, New York, chairman; William P. MacCracken, general counsel National Aeronautic Association, vice chairman.

Public Relations—Merrill C. Meigs, vice president Hearst Corp., Chicago, chairman; Edgar T. Bell, secretary-treasurer Oklahoma Publishing Co., Oklahoma City, vice chairman.

Newspapers—James B. Streibig, the Associated Press, Washington.

Radio—Leonard C. Reinsch, manager radio station WSB, Atlanta. Reinsch was a former member of President Truman's White House public relations staff.

Publications—Otis Peabody Smith, *Time* magazine, New York.

Advisory Group Studies VHF for Lightplanes

The Non-Scheduled Flying Advisory Committee to the Civil Aeronautics Administrator will meet October 17-18 to study Civil Aeronautics Board proposals and radio facilities for private flying. The location and program of the meet has not been named. Discussion will include the CAB's proposed revisions of CAR Part 24, radio in personal aircraft, and the development of very high frequency radio for private fliers. At present there is no VHF equipment available for lightplanes, and its future production does not assure low cost, which is essential to the private flier.

Planes to Extend Range of Television in Unique "Stratovision" Network

With the termination of war contracts, Westinghouse Industrial Electronics division has concentrated on the building of "stratovision" units for airborne television and FM radio transmission tests. Stratovision, recently announced by Westinghouse, is accomplished by transmitters flying six miles in the air, extending coverage of television and FM radio waves. Eight planes, each carrying four television and five FM transmitters, would form a coast-to-coast network. Strategically locating six additional planes, the coverage would extend to 51 per cent of the nation's area and 78 per cent of the population. Full time production and development is being applied to the stratovision project, and airborne field tests are to be made in co-operation with the Glenn L. Martin Company.

Committee Named for Collier Trophy

Dr. George W. Lewis, of the National Advisory Committee for Aeronautics, is chairman of the committee to determine the recipient of the Collier Trophy for 1944. Other members are Eugene E. Wilson, vice chairman, president of Aircraft Industries Association; William P. Redding, committee secretary, Denver; John Paul Jones, Des Moines; Harry K. Coffey, Portland, Ore.; Jacqueline Cochran, member of board of Northeastern Airlines, Inc.; Roscoe Turner, president of National Aviation Trades Association; Sheldon B. Steers, president of the National Association of State Aviation Officials; Major Lester Gardner, Institute of Aeronautical Sciences; General H. H. Arnold; Stuart Tipton, acting president of the Air Transport Association; and Captain Luis de Florez, USNR. The first meeting of the committee, which was named by William R. Eynart, National Aeronautic Association president, was held on October 8. The award will be made on December 17.

NASAO to Meet in St. Louis Nov. 5-7

The National Association of State Aviation Officials will hold its annual meeting November 5, 6 and 7 in St. Louis at the Coronado Hotel, according to E. W. Stanford, secretary-treasurer. Election of officers for 1946 will be held at that time.

DIRECT FUEL INJECTION, revealed last month as having been perfected on B-29 engines by Bendix-Stromberg, is illustrated by this cutaway model. Fuel is pumped under pressure directly into each engine cylinder, entering through the nozzle at the upper left. Spark plug is at the right.

National Air Races Planned for 1946; Jet Planes Expected

Plans are under way to resume the National Air Races at Cleveland next summer, with jet-propelled aircraft expected to take part in at least one event featuring the three-day program.

Albert J. Weatherhead, Jr., president of the Weatherhead Company and vice president of the Cleveland Chamber of Commerce, announced plans for the event after conferring with Lieutenant General Ira C. Eaker, AAF deputy commander, and Vice Admiral Marc A. Mitscher, deputy chief of Navy operations for air, who discussed Army and Navy participation. Tremendous development in aviation since the races were last held in 1939 will be reflected in the events next summer, which will also be tied in with Cleveland's sesquicentennial anniversary.

T. P. Wright Receives Guggenheim Award

T. P. Wright, Civil Aeronautics Administrator, is to receive the Daniel Guggenheim Medal for 1945, "For outstanding contributions to the development of civil and military aircraft, and for notable achievement in assuring the success of our wartime aircraft production program." Dr. G. W. Lewis, awards chairman of the Guggenheim Fund for the Promotion of Aeronautics, said Administrator Wright's achievements in the military aircraft production program as a member of the Aircraft Production Board and as director of the Aircraft Resources Control Office contributed largely to his being selected for the Guggenheim award. For the same achievements he received the War Department's award to civilians, namely, the Medal for Exceptional Civilian Service. The other factors involved in the Guggenheim Medal Award are his many technical contributions over the years as a leading aeronautical engineer and executive, including development of the airplane which won the $100,000 Award in the Guggenheim Safe Aircraft Competition of 1930.

STENCILS FOR "NC" numbers to be painted on aircraft are made from the same material as masking tape, and have their own adhesive on the back. The stencils have been designed and made by Wiggins Airways, Norwood, Mass., which has placed them on the market.

Cameras Allowed Aloft; CAA Asks Rescinding of All War Restrictions

The Civil Aeronautics Board is now permitting aerial photography by private fliers and airline passengers, but professional aerial photographers must get permission from area service or defense commanders before they can operate over military installations. The CAA and the CAB have stressed the need for all wartime flying restrictions to civil aviation to be lifted, and has urged the Interdepartmental Air Traffic Control Board to rescind bans. The IATCB is the only agency that can lift them.

Brewer Trophy Group Named by Enyart

The 1945 Brewer Trophy Committee has been appointed by William R. Enyart, president of the National Aeronautic Association. Committee chairman is Congressman Jennings Randolph; secretary is William P. Redding of Denver, and Russell W. Nichols of Washington, D. C., is advisor. Other members are Ed Miller, Model Industries Association; Willis Brown, U. S. Office of Education; Bruce Uthus, Civil Aeronautics Administration; Dr. George W. Lewis, National Advisory Committee for Aeronautics; Mrs. James H. Doolittle, secretary of the National Aeronautic Association; Mrs. Thomas Beck, of the Girl Scouts of America, and William Fawcett, of the Boy Scouts of America. The Brewer Trophy is presented annually to the individual who has made the most outstanding contribution to the development of air youth, in the education and training field.

"3-in-1" Control Device Announced by Firm

Greater New York Industries, Inc., has issued a release announcing patenting of a "3-in-1" control which is "comparatively inexpensive to manufacture, install and use in any airplane having the conventional arrangement of cable or rod connections to the elevators, ailerons and rudders."

The firm's description of the device, called "Elme," is as follows: "The unit comprises a substantially vertical shaft, rotation of which controls operation of the rudder, and a substantially horizontal shaft mounted on the vertical shaft for both reciprocation as well as rotation to control respectively the operation of elevators and ailerons. Notwithstanding that the pilot may operate each of the three controls simultaneously through the wheel, he may also operate each control independently of the others."

Lowell M. Birrell, president, said the "3-in-1" control should not be confused with the two-control type airplane, "as it is possible to do all maneuvers with the Elme control that can now be achieved with conventional aircraft." Flight tests have been conducted, he said.

Martin PBM's Carried First Radar in 1940

Two squadrons of PBM-1's, in convoy duty out of Iceland in 1940, were the first U. S. planes to carry radar on missions, and the Mariner has been a test ship for radar ever since. Frequently improvements were made in the radar equipment and installations, testing various wave-lengths in operation. The present PBM-5 has at least five separate types of radar which reveal location of objects, ascertain whether approaching aircraft is friend or enemy, and intercept and jam enemy radar. The latter is called radar counter measure. Radar equipment in one Mariner has about 300 radio tubes and five miles of wiring.

LANDING LAMPS for private aircraft, designed by General Electric Corp., are all-glass, hermetically sealed and self-reflecting units. The 4½-inch lamp produces about 100,000 candlepower, while the 5¾-inch lamp produces about 200,000 candlepower.

1,500 Brazilian Students in Riddle Flight Project

Riddle Aviation School, Miami, is training 1,500 students for the Brazilian Air Force, in co-operation with Escola de Aviacao, of Sao Paulo, Brazil, largest aviation technical school in Latin America. The Riddle school inaugurated the training of Brazilians in 1943 with an enrollment of four. Instructors are taught Portuguese so they can talk to the students in their native language.

55,523 Rolls-Royce Engines Built by Packard

Packard Motor Car Company ended its production of Rolls-Royce M. aircraft engines after making 55,523 of them since 1941. At one time during the war, 42,000 persons were making the engines, which were used in five types of aircraft. Packard also produced 13,000 marine engines, used in all PT boats.

1300-MPH. Speeds for Ordnance Test Studies

Supersonic speeds of more than 1,300 mph. can be produced at Aberdeen Proving Ground's wind tunnel to study the behavior of bombs and projectiles traveling faster than sound. Five Carrier Corporation centrifugal compressors develop 13,000 hp. from a 110,000-volt power line, and compress the air from 14.7 pounds per square inch to 183 pounds. The machines use only clean, dry air from a special tank for the experiments. Various speeds can be attained for different tests.

Michigan Aviation Week Conducted at Detroit

The Fourth Annual Michigan Aviation Week, held in Detroit, October 8-14, was to be featured by speeches by Capt. E. V. Rickenbacker, president of Eastern Airlines; J. Carlton Ward, president of Fairchild Engine and Airplane Corp.; Henry A. Wallace, Secretary of Commerce; General H. H. Arnold, and C. R. Smith, chairman of the board of American Airlines. Other events were a private plane conference, non-scheduled operators and feeder-line operators meeting and the Detroit International Aircraft Show at the Book Cadillac Hotel. C. J. Reese, president of Continental Motors Corp., was chairman of Michigan Aviation Week.

Air and Sea Navigation Equipment

Riggs Engine Performance Calculator	$10.00	641 Navy Aircraft Plotter	$ 1.50
DeVries Navigation Calculator	10.00	Weems Mark II Aircraft Plotter	2.00
King Position Computer	3.25	Simplified Flight Calculator	3.75
Navigation Note Book	2.00	Air Navigation by Weems	3.50
X-C (Cross Country) Computer	4.00	Hyatt's Celestial Coordinator	5.00
E6B Dalton D.R. Comp. (Plastic)	10.00	Elementary Physics as Applied to Aviation	1.00
Mark VII Dalton Computer	5.00	Cox & Stevens Computer	35.00
Mark VIII Dalton Computer	1.00	Flying Facts for the Private Flyer	2.00
D-4 Time-Distance Computer	2.00	Full Career Pilot Flight Log Book	2.25
The Lyon Computer (Plastic)	3.00	Coordinate Azimuth Ring for E6B	1.00
Mark 3A Navigational Plot. Board	12.00	Dean Radio Range Orientator	10.00
American Airlines Computer, New Model Type "C"	5.00	Cox & Stevens Universal Plotter	3.75

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BOOK REVIEWS

Wings Across the World, *by Hugh B. Cave, published by Dodd, Mead & Company, 432 Fourth Ave., New York City, price* $2.50.

This is the story, told for the first time, of the Air Transport Command of the U. S. Army Air Forces. It begins in the bleak days of 1940, when a handful of heroic fliers volunteered to ferry American-made airplanes across the Atlantic to England and gives the whole thrilling record of the world's most stupendous air line—its routes, bases, planes and the exploits which have made the Air Transport Command one of the war's most talked-about marvels.

Included are chapters on the Naval Air Transport Service, a discussion of postwar aviation probabilities, and a list of transport planes used by the Army and Navy.

Optical Instruments, *by Earle B. Brown, published by Chemical Publishing Company, Inc., Brooklyn 2, N. Y., price* $10.00.

This book has been written to fulfill the need for a volume thoroughly covering the general field of optical instruments. It discloses the basic principles of design and function, as well as adjustment of the various common types.

Considerable emphasis has been placed on the telescope, as the majority of optical instruments are telescopic in principle. There is also a chapter on the spectroscope and on the range finder.

Much material has been included on the care and maintenance of optical instruments.

NEW LITERATURE

Pan American World Airways, 135 *East 42nd St., New York, N. Y.,* has published a source book of Latin America for foreign dealers, entitled "The Wealth of the Other Americas". Making its appearance at this time, when international trade once more promises to become accessible, this book, in addition to its importance to prospective traders, contains much general information of value to educators, travel agents and prospective travelers to this area.

Pan American also has available attractive individual booklets on Mexico, Venezuela, Colombia, Central America, Argentina and Brazil.

Pesco Products Co., 11610 *Euclid Ave., Cleveland 6, Ohio,* has announced its new Pesco Vapor Control Booklet (Bulletin No. 9) on its new fuel booster pump. Available upon request.

American Cyanamid Company, 30 *Rockefeller Plaza, New York* 20, *N. Y.,* will send to interested readers upon request a copy of its 24-page illustrated booklet describing the many applications of the chemical melamine, in the plastics, textile, paper, leather, chemical, paint and allied industries. The booklet is designed for popular appeal.

The Permold Company, *Medina, Ohio,* has just published a 20-page, two-color Reference Data Bulletin 45 PMC, giving practical rules to follow in the use of permanent mold castings. Various applications of permanent-mold-castings are illustrated by photographs of many varied parts.

This booklet is especially desirable in that it offers clear-cut methods for obtaining the lowest piece price for each part at the point of assembly.

Aeroquip Corporation, *Jackson, Michigan,* has issued a new Industrial Bulletin No. 107 on Self-Sealing Couplings. Copies available upon request.

North American Phillips Company, Inc., 100 *East 42nd St., New York,* has announced publication of a 12-page booklet titled "Engineering-Design Development of X-Ray Spectrometer".

The text material was written by Mr. J. S. Buhler, Technical-Commercial Manager, and covers in detail the basic design principles involved in the Geiger-Counter X-Ray Spectrometer—recently developed industrial control tool.

American Foundry Equipment Co., 500 *South Byrkit St., Mishawaka, Indiana,* has just published an illustrated booklet cataloging and pricing three grades of "Long-Lyfe" blast nozzles. Ask for Catalog No. 27.

The Torrington Company, *Torrington, Connecticut, and South Bend* 21, *Indiana,* has announced publication of a new 153-page manual—a combined catalog and engineering and application data reference volume for designers and engineers. Entitled "Torrington Needle Bearings," listed as Edition No. 32, the manual is fully indexed for handy reference and has many tables, formulae and illustrations that clarify the technical data. Copy will be sent on request.

Aviation Supply Corporation, *Atlanta Municipal Airport, Hapeville, Georgia,* has issued Section 7 of its Aviation Supply Catalog, covering power tools and large equipment.

This company also has announced the latest developments in the Hobbs line of aircraft instruments—a Flight Hour Meter and Air Switch that automatically logs flying time of all aircraft and the Hobbs Engine Hour Meter which logs all engine time.

Aircraft Screw Products Company, Inc., 47-23 *35th St., Long Island City* 1, *N. Y.,* has published Bulletin No. 237-A describing the advantages of "Heli-Coil" Spark Plug Bushings as opposed to various other types of installations—contains data on assembly and servicing—gives details on a typical installation.

Colonial Broach Company, *P. O. Box 37 Harper Station, Detroit* 13, *Michigan,* has issued a four-page, two-color folder (Bulletin VMS-45) describing its improved standard line of Pull-Down broaching machines.

Electronic Corporation of America, 45 *West 18th St., New York* 11, *N. Y.,* has announced the publication of a booklet, The Amazing Electron, for distribution to educators, consumer organizations, farm groups, labor unions, and the general public.

Illustrated in cartoon technique, and simply written, the booklet is intended to bring within the grasp of everyone the basic facts about electronics.

Copies can be obtained free of charge to individuals and in quantities of twenty or more for a five-cent handling charge.

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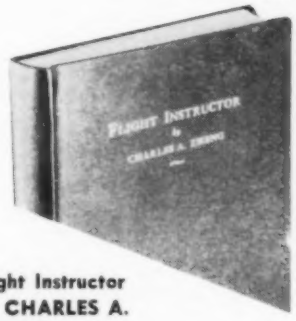

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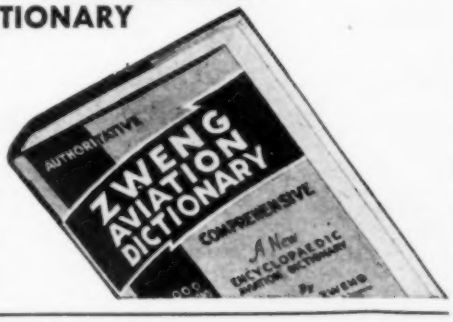

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Future CAP Policy To Be Decided Soon by Wing Commander

"Where do we go from here?" might well be the theme of a meeting to be called soon by Col. Harry H. Blee, acting national commander, of the forty-eight-state Wing commanders of the Civil Air Patrol.

Colonel Blee has already advised Wing commanders of the contemplated conference to discuss the future of the organization, its new policies, and to hear reports of many constructive suggestions being made for the peacetime operation of the wings.

Meanwhile, all members are urged to submit any proposals they may have for the future of the Civil Air Patrol through their local units which in turn will see that they get to the wing commander.

Because of the sudden ending of the "fighting part" of the war, Washington has been too busy with many more important developments requiring immediate attention and consequently, the new Civil Air Patrol policy has been momentarily stymied.

California Wing Using $214,000 State Funds

Setting a sparkling precedent for other states was the governor of California in signing a bill appropriating $214,000 to aid the training program of the Civil Air Patrol's California Wing for the next two years. The funds became available September 15. They will be administered by the State Department of Education in co-operation with the Wing staff.

California's aircraft industry vigorously supported the bill which passed the state's Assembly with only three dissenting votes. It then passed the State Senate unanimously, giving the "monkey sign" to those folks predicting an early end to the CAP.

Previously, Colorado had appropriated $20,000 and Wyoming, $16,000, to the Civil Air Patrol Wings in their respective states for two-year programs.

Cadet Strength Nears 100,000 Mark with Reopening of Schools

Recruiting stepped up rapidly throughout the forty-eight Wings immediately after the opening of school in September, leading the national headquarters of the Civil Air Patrol to become highly optimistic over the prospect of reaching the goal of 100,000 men and women between fifteen and seventeen years of age.

Enrollment in the CAP leveled off during the third year of the organization's operation, especially during the summer months when large numbers of Cadets and senior members were busily engaged at work due to the increasing manpower shortage.

The enrollment last spring reached 80,000 Cadets and 55,000 senior members, and scattered early reports indicate that the 100,000 mark for Cadets will be achieved.

In addition, many veterans returning from war are enrolling as senior members to help generate greater activity and interest on the basis of their experience in many phases of aviation.

Public Schools Give Credit for CAP Work

The trend toward obtaining high school credit for Civil Air Patrol work is gaining momentum, with the Fort Worth school system considering granting credit for all of the various ground school courses as a result of the efficient program being conducted by that city's Group.

Schools in Arizona are already giving students credit for CAP work, and Wing commanders from several other states, especially in the East, report they are receiving favorable consideration for such a plan.

CAP Forest Patrols Active for Fire Season

Civil Air Patrol squadrons in several states are resuming their important forest patrol service as a result of the approaching fire danger season, with the Texas patrol, which accomplished such an outstanding record during the past two years, again on the wing.

Energetic Units Sure To Get Surplus Aids

Local units of the Civil Air Patrol generating the necessary enthusiasm and initiative plus constructive action in the way of providing housing quarters are assured of receiving a variety of surplus equipment and material being released by the Army Air Forces.

Proper quarters, along with accessible locations for use, are essential for housing the equipment, and necessary classroom aids and shop facilities must be prepared for before they will be provided.

Illinois-Indiana Girl Cadets in AAF Training

More than a hundred girls from Illinois and Indiana went to Sturgis Army Air Field for training as Civil Air Patrol Cadets. A full schedule was in order for the two weeks that the girls were at the field. Reveille at six each morning, classes and drill. Classes taught were meteorology and navigation, with much time devoted to physical training and drills.

This was part of the CAP summer camp training program. Interest in aviation has been reflected in the growth of the summer groups throughout the country and their training at Army installations.

More Flight Scholarships

Scholarships for eight flying hours have been awarded to five Cadets of the Des Moines, Iowa, squadron. Business men donated the flying time, which will be taken with a commercial operator. The awards were made on the basis of scholarship, attendance, general activities and attitude. Further scholarships are planned.

The Civil Air Patrol Squadron of Sheldon, Iowa, has recently awarded four flight scholarships to Cadets, three boys and a girl, through funds that were raised at CAP dances. The scholarships provide for five hours of flying at $9 per hour with local commercial operators giving the instruction.

New Squadron Quarters

Sacandaga Squadron, New York, has moved to a new headquarters, consisting of a large brick house with facilities for a mess hall, ballroom, assembly hall, office space, radio room and photo laboratory. There are separate rooms for Cadets, and a game room is located in the basement. A dedication ceremony has been held for the new headquarters, with a reception, parade and mock flying exhibition being held. The mayor of Amsterdam was the guest speaker.

The Sacandaga Squadron was formerly named "Amsterdam" Squadron.

Newland Succeeds Kratz as Commander of Missouri Wing

Lt. Col. David W. Kratz, Civil Air Patrol, has resigned as Missouri Wing Commander, and Lt. Col. Kenneth Newland of Columbia, Mo., has been appointed to succeed him as commander for the Missouri Wing. Colonel Newland is aviation director of Stephens College, and an educational consultant to the Civil Aeronautics Administration. Colonel Kratz had been commander since January 16, 1943.

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By TONY HAGMANN

Los Angeles . . . The English are smart, and like the B in subtle there is a method and a meaning in what they do, though you can't always put your finger on it. In this country, on a recent mission to the States, was R. L. Robinson who represents Miles Aircraft Ltd. of Reading, England. He is one of the wittiest men we've met in a stack of Saturdays and if the Britishers don't send him back for a longer stay, everybody will lose. Wing Commander Goodenough gave a cocktail party complete with dinner for Ralph (he is a rare Englishman, first name, first meeting) where we met some other aircraft people such as R. H. Whempner and R. G. Hoch of the Minneapolis Honeywell, and Bob Askew from Douglas Aircraft. Just talking, you know. And we talked about a fountain pen which will do everything—like write under water, coke and rum (this we saw!), needs filling once a year, makes carbons and darned fine conversation. Then we got around to the planes of England, Miles, of course, and here is a secret. They have an airplane for us to watch and we may be watching a lot of them. More on this subject later, this for sure. Ralph Robinson's gone back to England, but we hope he comes back to the States, complete with family, lovely wife and daughter. Okay, and airplane.

From Margaret Keogh in Antwerp, Belgium, (ole foreign week) came news of herself and some other Dallasites. Margaret says, "We came over in a C-54 with American Airlines crews and had a wonderful trip, smooth as glass. We arrived in Paris and stopped off in Newfoundland and the Azores on the way over. We were in Paris for a week because a low priority bumped us every day. We appreciated being bumped and saw all of Paris before getting on our way. Paris was just like old home week to me. Ran into Ben Eaton the first thing (he was with priority in Dallas), next day I saw Jim Kinney and Fred Lanter with the CAA in Washington, and another day I met "Tex" Butler, who is now an ATC pilot with TWA. He was at DAS and a friend of Hart Bowman's. Met Elinor Bond (formerly Dallas) who has a nice apartment and a French maid who speaks no English (Elinor speaks no French). Europe will be fun." Imagine Paris with Texans to show you the ropes. Margaret is with the State Department, sends "hello" to all her flying friends in Big D.

While we are on the subject of people from far and wide, Mrs. Allen Guiberson was in Los Angeles on a little junket and told us of receiving wings and the honor of being on the Nicaraguan Air Force much to her surprise and pleasure. She hopes they never need her services in the Air Force, but is proud of the honor. And we know Steadham Acker of Birmingham was in town because we heard him on the radio. He attended the famed Breakfast Club one morning and said he had just completed a trip for an airline and was working up a huge air show at the same time, said it might be in Chicago, thus proving one should listen to the radio once in a while. We would mention Lt. Commander Earl Chandler again but he's getting to be a commuter. In case you plan a trip out here, let us know so we can say "howdy." Just drop us a line.

We tripped out to Lockheed and saw ole Joe Towle. He had just spent some Dallas time and was in good form. Told us of D. Harold Byrd's dinner party for Don Marshall and himself which sounded like a dillie. And we ran into Cotton Jeeter, Jim White, George McIntire, John Cody and Jimmy Mattern.

We'd leave you here, but that is too funny and a serious thought is bound to be in order. We got a letter saying the Texas 99'ers were getting ready to take up where they left off. We heard from Ruth Taylor of Midwest Airport over in Fort Worth who wanted SOUTHERN FLIGHT to be sent over and darned quick and one letter from our bank which wouldn't interest anyone but us and us very strangely. Ho hum . . . banks!

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New York to England. This was told us for a fact and the fellow crossed his heart and kicked a small duck in the water to prove it. Finally we've heard the proper answer to that over-advertised question and hope it is stopped.

Bye now. . . .

Dallas — The Southwest Control-Line Aeromodel Championships were held here last month, attracting a crowd of approximately 9,000 persons who came from more than sixteen towns in Texas, Oklahoma and Louisiana. The highest speed for the event was clocked by James D. Currey, Dallas, with an original model powered with Bunch Tiger engine. Currey's speed was 109 mph., the fastest official time ever made in the Southwest. He was the winner of the Class C, senior group (from .50 to .65 in. displacement). Other winners were: Class A, senior group (up to .36 in. displacement), J. G. Peterson, Fort Worth, 73 mph., and junior group, Donald Harvey, Fort Worth, 71 mph.; Class B, senior group (from .36 to .50 in. displacement), Jim Clem, Dallas, 90 mph., and junior group, Jack McCreary, Houston, 75 mph.; Class C junior group, Bill Killingsworth, Waco, 99 mph.

Workmanship and appearance, control flying models, was copped by Rogers Barton of College Station. SOUTHERN FLIGHT presented Barton a trophy and a War Bond. In the judging of the non-flying models, Richard Aubrey won in the senior division, Richard Wickline in the intermediate and Virginia Hamilton in the junior.

E. L. Brown, Waco, was first in stunts, and Jack Elrod, also from Waco, copped the spot landings contest.

The highest point winner for the control line was Jim Clem, thereby winning the Exchange Club grand championship award; Rogers Barton was the runner-up. Currey, besides winning top honors in the class C division, also won the hobby counter annual trophy for the highest speed of a Dallas County entry.

The event was sponsored by the Dallas Exchange Club. Some of the highlights: Two ships burned, but the engines were saved; the oldest entrant was forty-three years old, and the youngest, eight; an Ercoupe built to scale with lights—it flew during the evening. Dr. L. S. Adams, air pickup pioneer and planting-by-airplane expert, was a visitor.

SOUTHWEST CONTROL-LINE AEROMODEL CONTEST judges included, left to right, W. L. Ross, Dallas Aviation School; W. H. York, regional vice president of the National Exchange Club; George Coker, American Airlines, and Lt. Barney L. Gibbs, Civil Air Patrol. The contest, held in Dallas, was sponsored by the Dallas Exchange Club.
—(Photo by Thomas K. Cone.)

Kansas City, Mo.—*by Marion Melcher.* The GI's are swarming over the Grandview airport these days in the redeployment-by-air program set up recently. The planes make only fifteen-minute servicing stops on their cross-country flights. Other similar stops are made at Newark, Indianapolis, St. Louis and Albuquerque. We glimpsed Bill (airport commissioner) Brown having a second cup of coffee back at Municipal airport after the inaugural flight from the auxiliary field. Among others we saw were Cliff Mutchler and John Collings of TWA. Jessie Dimmock, same airline, was munching a roll at the counter. Mid-Continent's Bob Moreland and John Cunningham were in the lobby. And if we'd really looked, we'd have seen more folks we knew.

The three-day meet of Group 2 of the Missouri wing of CAP held at Fairfax Municipal airport went off without mishap. The annual maneuvers included formation flying, mapping missions, message dropping, bombing, first aid, code blinker contest and other events. The prizes were worthwhile, with Capt. Esther Wirthman in charge of procuring them. Among those assisting CAP with trophies, aside from Capt. Wirthman, who gave several personally, were the staff officers of Kansas City Group 2, the Chamber of Commerce, WNAA, McKesson & Robbins, Inc., Missouri Aviation Corporation, Mid-Continent Airlines, and TWA.

President Truman's home town of Independence, Missouri, has a new airport four miles southeast of town on the R. D. Mize road. A crowd of 3,000 watched its Labor Day air show. A twenty-year-old girl, Frances Sebastian of Charlotte, Michigan, made the crowd gasp with a 3,000-foot parachute descent. Another thriller was Russell Price of Kansas City, who did aerial acrobatics. In all fifteen planes competed in the events.

Harrisonville, Missouri, had airport dedica-

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on day on September 16. Squadrons 1, 2, 3, nd 4 of Kansas City flew over for the event, nd some members flitted back with trophies, oo.

The CAA is urging the erection of air narkers in this territory. WNAA is among hose interested in the project.

Capt. Roland P. Kauffman, commanding fficer at the Olathe naval base, was guest peaker at the September meeting of WNAA n the Hotel Phillips. He's a man of few words, but made them count when he told of life on an aircraft carrier, especially the Intrepid. Among the guests, and just returned from the European war theatre, was Col. Ned Sparks. For those of his aeronautical friends who want to know, he still drops silverware to fluster dinner guests taking an introductory bow.

Could that be a satisfied gleam in the eyes of the reservation gals when you get your airline ticket? And could it be caused by the lifting of priorities?

Dawdling behind a heavy truck on the airport bridge this morning, I rejoiced that there's a plan to rehabilitate the antiquated Hannibal bridge at a cost of $800,000 when the airport puts on its postwar face. It will be wonderful to whizz by these traffic snarlers.

El Paso—Celebrating Aviation's anniversary, the El Paso Chamber of Commerce will sponsor an exhibit and air show December 16 and 17 at its Municipal airport. Because of the strategic location of the city, the occasion is being called International Aviation Day. Herbert L. Haas, member of the National Aviation Trades Association, is a member of the committee. One of the features will be a barbecue party the night of December 16.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACTS OF CONGRESS OF AUGUST 24, 1912, AND MARCH 3, 1933, of SOUTHERN FLIGHT, published monthly at Dallas, Texas, for October, 1945.

State of Texas. }
County of Dallas, } ss

Before me, a Notary Public in and for the State and county aforesaid, personally appeared R. T. Gidley, who having been duly sworn according to law, deposes and says that he is the Business Manager of SOUTHERN FLIGHT, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

1. That the names and addresses of the publisher, editor, managing editor, and business manager are:

Publisher: Air Review Publishing Corporation, Dallas, Texas.
Editor: George E. Haddaway, Dallas, Texas.
Managing Editor: Thomas Ashley, Jr., Dallas, Texas.
Business Manager: R. T. Gidley, Dallas, Texas.

2. That the owner is: (if owned by a corporation, its name and address must be stated and also immediately thereunder the names and address of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.)

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3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: NONE.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the twelve months preceding the date shown above is: (This information is required from daily publications only.)

(Signed) R. T. GIDLEY,
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Sworn to and subscribed before me this 26th day of September, 1945.
(Signed) ELIZABETH WICKER.

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Edo to Deliver Floats in Late November

Edo Aircraft Corporation, College Point, L. I., N. Y., is converting part of its plant facilities to the construction of seaplane floats for private aircraft, with deliveries expected the last of November. Several other floats of more displacement for larger planes are expected to be in production within six months. The first type floats, model 1320, have been approved by the CAA for installation in Aeronca S-65CA, Luscombe 8-A, C and D, Piper Cub J-3-C-65 and Taylorcraft BC-12 planes. Edo plans to produce floats at several times its prewar figures because of increased demand.

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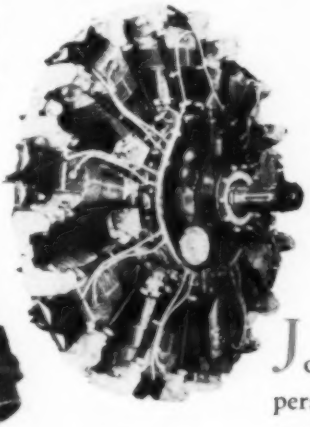

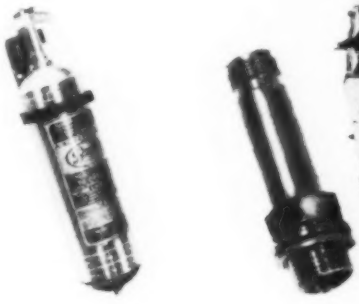

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